

1. Familial hypercholesterolemia was detected during the examination of a teenager with xanthomatosis. In this pathology, a significantly increased concentration of certain lipoproteins can be observed in the blood. Name these lipoproteins?

- a. High-density lipoproteins
- b. Chylomicrons
- c. Non-esterified fatty acids (NEFA)

**d. Low-density lipoproteins**

- e. Very-low-density lipoproteins

2. A 40-year-old woman, who was systematically taking acetylsalicylic acid, developed hemorrhages. Disturbed functional activity of platelets was detected. This phenomenon is associated with inhibition of a certain enzyme. Name this enzyme.

- a. Glucose-6-phosphate dehydrogenase

**b. Cyclooxygenase**

- c.  $\text{Na}^+$ ,  $\text{K}^+$ -ATPase
- d. Cytochrome oxidase
- e. Cholinesterase

3. A child has been diagnosed with Tay-Sachs disease that is associated with a certain metabolic disorder. What type of metabolism is disturbed in this case, causing this disease?

- a. Mineral metabolism

**b. Lipid metabolism**

- c. Protein metabolism
- d. Carbohydrate metabolism
- e. Amino acid metabolism

4. 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. Hemoglobin A1
- b. Hemoglobin C
- c. Methemoglobin
- d. Hemoglobin F

**e. Hemoglobin S**

5. Auscultation shows a pathological noise in the second intercostal region near the sternum. What valve is likely to be damaged?

- a. Tricuspid valve
- b. Pulmonary valve
- c. Mitral valve
- d. -

**e. Aortic valve**

6. Histological slide of the biopsy material obtained from epidermis of a healthy adult shows dividing cells in the basement layer. What process occurs due to these cells?

- a. Adaptation
- b. Differentiation

**c. Physiological regeneration**

- d. Apoptosis
- e. Reparative regeneration

7. 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 and frequency of respirations will increase**

- b. Respiration will remain unchanged
- c. Depth of respirations will increase, frequency of respirations will decrease
- d. Depth and frequency of respirations will decrease
- e. Depth of respirations will decrease, frequency of respirations will increase

8. A woman with Rh-negative blood of the II group gave birth to a baby with the blood group IV. The

baby has been diagnosed with hemolytic disease caused by the Rh incompatibility. What blood group is possible in the child's father?

- a. III (B), Rh-positive
- b. I (O), Rh-positive
- c. IV (AB), Rh-negative
- d. II (A), Rh-positive
- e. III (B), Rh-negative

9. A 26-year-old patient complains of muscle pain, seizures, muscle weakness, and red urine, observed after minor physical exertion. Muscle biopsy detected accumulation of glycogen in the muscles. No changes were detected during liver biopsy. What disease is most likely in the patient?

- a. Von Gierke disease
- b. McArdle disease
- c. Niemann-Pick disease
- d. Maple syrup urine disease
- e. Hartnup disease

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

11. What internal organ plays the largest role in humoral regulation of erythropoiesis?

- a. Liver
- b. Kidneys
- c. Lungs
- d. Pancreas
- e. Gastrointestinal tract

12. What drug must be used as an antidote in cases of poisoning caused by narcotic analgesics?

- a. Sodium thiosulfate
- b. Unithiol
- c. Protamine sulfate
- d. Naloxone
- e. Adrenaline hydrochloride

13. The synthesis of dioxyphenylalanine (DOPA) in the limbic system of the brain provokes a feeling of fear in a person. DOPA is synthesized from the following amino acid:

- a. Tyrosine
- b. Lysine
- c. 5-Oxytryptophan
- d. Glutamic acid
- e. Tryptophan

14. 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. Ventral hypothalamic nuclei
- c. Posterior hypothalamic nuclei
- d. Medial hypothalamic nuclei
- e. Supraoptic nuclei

15. 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. Regeneration
- b. Inhibition
- c. Compensation
- d. Adaptation**
- e. Proliferation

16. 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 will remain unchanged
- b. Respiratory rate will increase
- c. Breathing will stop**
- d. Respiratory rate will decrease
- e. Breathing depth will increase

17. 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 PP**
- b. Vitamin A
- c. Vitamin C
- d. Vitamin B<sub>1</sub>
- e. Vitamin B<sub>2</sub>

18. A patient presents with impaired water reabsorption in the kidneys, which is directly related to disturbed secretion of a certain hormone. Name this hormone.

- a. Thyrocalcitonin
- b. Parathyroid hormone
- c. Natriuretic hormone
- d. Aldosterone
- e. Vasopressin**

19. A patient developed punctate hemorrhages after a tourniquet had been applied. It occurred due to functional disturbance of the following blood corpuscles:

- a. Monocytes
- b. Lymphocytes
- c. Neutrophils
- d. Eosinophils
- e. Platelets**

20. A patient is diagnosed with severe B<sub>12</sub>-deficiency anemia resulting in disturbed hematopoiesis and appearance of atypical erythrocytes in the blood. The patient has a history of total gastric resection. This diagnosis can be confirmed if the following cells are present in the peripheral blood:

- a. Elliptocytes
- b. Megalocytes**
- c. Anulocytes
- d. Normocytes
- e. Microcytes

21. What type of food can cause trichinellosis, if it is of poor quality?

- a. Unwashed vegetables and fruits
- b. Fish
- c. Crayfish and crabs
- d. Pork**
- e. Beef

22. In adipocytes of adipose tissue, the pentose-phosphate pathway has the nature of a cycle. What is the main function of this cycle in adipose tissue?

- a. Production of ribose phosphates
- b. Generation of NADPH<sub>2</sub>**
- c. Energy generation

- d. Neutralization of xenobiotics
- e. Oxidation of glucose to end products

23. 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. Overproduction of growth hormone
- b. Hypothyroidism
- c. Diabetes mellitus
- d. Hyperthyroidism**
- e. Adrenal insufficiency

24. The patient's ECG shows that in the second standard lead from the extremities the P waves are positive, their amplitude is 0.1 mV (norm is 0.05-0.25 mV), duration - 0.1 seconds (norm is 0.07-0.10 seconds). It can be concluded that the following process occurs normally in the cardiac atria during:

- a. Excitation
- b. Contraction
- c. Depolarization**
- d. Repolarization
- e. Relaxation

25. A person with a heatstroke was brought into an admission room. What defensive and compensatory mechanism develops in this condition?

- a. Coronary spasm
- b. Stable hyperglycemia
- c. Increased heart rate
- d. Peripheral vessel dilation**
- e. Peripheral vessel constriction

26. 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. Stimulation of the conductive system by the toxins that were not neutralized in the liver
- b. Bile acid damage to the myocardium
- c. Bile acid stimulation of the vagal receptors
- d. Bile acid damage to the sinus node
- e. Bile acid stimulation of the sinus node**

27. A patient has a skin inflammation in the first interdigital space of the foot. What regional lymph nodes will be swollen and painful in this case?

- a. Superficial inguinal lymph nodes**
- b. Posterior tibial and popliteal lymph nodes
- c. Anterior tibial lymph nodes
- d. External iliac lymph nodes
- e. Superficial and deep inguinal lymph nodes

28. A man with chronic constipation was taking daily one tablet of Bisacodyl. After a time he had to start taking 2 tablets daily to achieve the same effect. This type of change in the action of active substances is called:

- a. Habituation**
- b. Sensitization
- c. Idiosyncrasy
- d. Cumulation
- e. Drug dependence

29. A 2-year-old child presents with marked delay in psychomotor development, vision and hearing deterioration, marked enlargement of the liver and spleen. The child is diagnosed with hereditary Niemann-Pick disease. What genetic defect is the cause of this disease?

- a. Acid lipase deficiency
- b. Xanthine oxidase deficiency
- c. Glucose 6-phosphatase deficiency
- d. Amylo-1,6-glucosidase deficiency

**e. Sphingomyelinase deficiency**

30. In a 50-year-old patient, the processes of protein degradation in the intestine intensified after a gastric resection. What urine value will increase in this case, indicating the patient's condition?

- a. Stercobilinogen
- b. Creatinine
- c. Oxyproline

**d. Animal indican**

e. Uric acid

31. The causative agent of hepatitis D (delta agent) is a defective virus that can only replicate in the cells that are already infected with:

- a. Hepatitis A virus
- b. Epstein-Barr virus
- c. Human immunodeficiency virus
- d. Hepatitis E virus

**e. Hepatitis B virus**

32. 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. Hyperhydration of brain cells (swelling)
- c. Toxic damage
- d. Energy deficit
- e. Ionic imbalance

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

**a. Cyanide**

- b. Phosphate
- c. Nitrite
- d. Sulfate
- e. Oxalate

34. 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. Was less potent

**b. Had practically no resorptive effect**

- c. Was cheaper
- d. Had short-term action
- e. Increased insulin synthesis

35. A person can raise an arm to a given height relative to the torso with the eyes closed. What receptors enable this action?

- a. Exteroreceptors
- b. Visceroreceptors
- c. Chemoreceptors

**d. Proprioceptors**

e. Baroreceptors

36. A patient complains of pain in the upper umbilical region. On palpation there is a mobile painful intestine. What intestine is being palpated by the doctor?

- a. Ileum
- b. Jejunum

c. Transverse colon

d. Sigmoid colon

e. Duodenum

37. A 25-year-old woman came to a doctor with complaints of dysmenorrhea and infertility. Examination revealed that the woman's height is 145 cm, her secondary sexual characteristics are underdeveloped, she has a webbed neck (with wing-like folds). No Barr bodies were detected in her buccal epithelium. What pathological condition is observed in the patient?

a. Trisomy X

b. Turner syndrome

c. Klinefelter syndrome

d. Down syndrome

e. Morris syndrome

38. What enzymatic system uses the energy of electrochemical potential for ATP synthesis in mitochondria?

a. ATP synthase

b. Pyruvate dehydrogenase

c. ADP-ribosyl transferase

d. RNA polymerase

e. NAD<sup>+</sup>-dehydrogenase

39. Histology of an eyeball wall microslide shows a structure consisting of a chain of three neurons. The bodies of these neurons form an outer layer, an inner nuclear layer, and a ganglion layer. What structure of the eye has such a morphology?

a. Ciliary body

b. Vascular membrane

c. Iris

d. Retina

e. Sclera

40. A patient presents with signs of exudative pleurisy. The liquid will accumulate predominantly in the following anatomical structure:

a. Recessus costodiaphragmaticus pleure

b. Sinus transversus pericardii

c. Recessus frenicomedialastinalis pleure

d. Sinus obliquus pericardii

e. Recessus costomedialastinalis pleure

41. A man had a bronchospasm attack. What membrane cytoceptors of bronchial smooth muscles should be stimulated to improve the patient's condition?

a. H<sub>2</sub>-histamine receptors

b. Muscarinic acetylcholine receptors

c. Nicotinic acetylcholine receptors

d. beta-adrenergic receptors

e. alpha-adrenergic receptors

42. A patient complains of skin itching, especially between the fingers, in the armpits, and on the lower abdomen. Examination revealed small vesicles on the affected areas. Laboratory diagnostics determined that this condition is caused by a certain Arthropoda species. Name this disease:

a. Scabies

b. Demodicosis

c. Dermatotropic leishmaniasis

d. Myiasis

e. Pediculosis

43. In the process of human aging, the synthesis and secretion of pancreatic juice decreases and its trypsin levels become lower. It results in disturbed breakdown of:

a. Nucleic acids

- b. Lipids
- c. Phospholipids
- d. Proteins**
- e. Polysaccharides

44. Blood of a man, who 3 days ago had an acute blood loss, was studied and its leukocyte composition was determined to be as follows: leukocytes -  $12 \cdot 10^9/L$ , basophils - 0 %, eosinophils - 3 %, monocytes - 0 %, juvenile - 3 %, band neutrophils - 12 %, segmented neutrophils - 62%, lymphocytes - 16%, myelocytes - 4%. What change in the blood leukocyte composition takes place in this case?

- a. Neutrophilia with a degenerative left shift
- b. Neutrophilia with a regenerative left shift**
- c. Neutrophilia with a right shift
- d. Absolute monocytopenia
- e. Absolute lymphocytopenia

45. A patient presents with a purulent inflammatory process in the thigh region (a post-injection abscess). Which lymph nodes become enlarged because of this process?

- a. Paratracheal
- b. Submandibular
- c. Inguinal**
- d. Posterior cervical
- e. Popliteal

46. 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. Residual blood nitrogen
- b. Glucose tolerance**
- c. Urine glucose
- d. Glycated hemoglobin
- e. Blood urea

47. A 45-year-old woman developed an acute inflammatory disease of her upper respiratory tract and eyes during the flowering period. She presents with hyperemia, edema, and mucous discharge. Increase in the number of what type of leukocytosis would be characteristic in this case?

- a. Basophils
- b. Neutrophils
- c. Lymphocytes
- d. Monocytes
- e. Eosinophils**

48. Patients from the same family were admitted to a hospital with edema of the eyelids and face, fever, eosinophilia, headache, and muscle pain. The disease onset occurred 7-10 days after eating pork sausage. Make the diagnosis.

- a. Taeniasis
- b. Cysticercosis
- c. Taeniarhynchosis
- d. Trichinellosis**
- e. Echinococcosis

49. 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. Differentiation
- b. Repair
- c. Maturation
- d. Apoptosis
- e. Proliferation**

50. Examination revealed that patient has problems with seeing color green. What cells are absent in the patient's retinas, causing the vision impairment?

- a. Bipolar neurons
- b. Neurosensory cells - rods
- c. Neurosensory cells - cones**
- d. Ganglionic neurons
- e. Retinal pigment epithelium

51. During an examination of the patient, the surgeon detected an injury in the upper third of the kidney. What organ should be checked for its intactness in this case, given the syntopy of the left kidney?

- a. Liver
- b. Stomach**
- c. Descending colon
- d. Transverse colon
- e. Small intestine

52. 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. Chronic cholecystitis
- d. Acute catarrhal cholecystitis
- e. Acute gangrenous cholecystitis

53. The mother's karyotype has 45 chromosomes. It was determined that translocation of chromosome 21 to chromosome 14 had occurred. What disorder is likely to be observed in the child of this woman if the father's karyotype is normal?

- a. Down syndrome**
- b. Edwards syndrome
- c. Morris syndrome (androgen insensitivity)
- d. Klinefelter syndrome
- e. Patau syndrome

54. Cushing disease (hyperfunction of the adrenal cortex with increased production of corticosteroids) leads to the development of hyperglycemia. What process is stimulated in this case?

- a. Pentose phosphate pathway of glucose oxidation
- b. Krebs cycle
- c. Glycogen phosphorylation
- d. Gluconeogenesis**
- e. Glycolysis

55. 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. Heme synthetase
- b. Heme oxygenase
- c. Biliverdin reductase
- d. UDP-glucuronyltransferase**
- e. Sulfotransferase

56. What part of the nervous system increases its activity under the influence of thyroid hormones?

- a. Parasympathetic and metasympathetic divisions of autonomic nervous system
- b. Parasympathetic division of autonomic nervous system
- c. Sympathetic division of autonomic nervous system**
- d. Somatic nervous system
- e. Metasympathetic division of autonomic nervous system



57. A patient complaining of nausea and heartburn after meals, and steatorrhea came to the gastroenterologist. What is the likely cause of the patient's condition?

- a. Amylase deficiency
- b. Disturbed pepsin synthesis
- c. Bile acid deficiency**
- d. Disturbed phospholipase synthesis
- e. Increased lipase production

58. A 43-year-old man came to a neurologist with complaints of shortness of breath, chest pain, hiccups, and problematic cough movements. What nerves are affected in this case?

- a. Intercostal nerves
- b. Sympathetic trunks
- c. Phrenic nerves**
- d. Parasympathetic nerves
- e. Vagus nerves

59. Material, obtained from the wound of a patient with a suspected gas anaerobic infection, was inoculated on a previously boiled Kitt-Tarozzi medium. For what purpose was the medium heated?

- a. Sterilization of the medium
- b. Oxygen enrichment
- c. Dissolution of salts
- d. Oxygen removal**
- e. Destruction of microbes

60. Myocardial histology shows a large area, where there are no nuclei in cardiomyocytes and their cytoplasm is pink and homogeneous. On the periphery of the lesion there are dilated, acutely plethoric vessels and marked infiltration with segmented leukocytes. This histological presentation indicates:

- a. Demarcation inflammation around the infarction**
- b. Septic disintegration of the infarction
- c. Infarction encapsulation
- d. Impending infarction
- e. Aseptic autolysis of the infarction

61. 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. Tuberculoma
- c. Fibrocavitary tuberculosis
- d. Acute focal tuberculosis
- e. Caseous pneumonia

62. Wernicke-Korsakoff syndrome often develops in chronic alcoholics, who have a low-vitamin diet. Decreased transketolase activity can be observed in the course of this disease. What vitamin deficiency causes this development?

- a. Retinol
- b. Riboflavin
- c. Cobalamin
- d. Niacin
- e. Thiamine**

63. After administration of antitetanus serum the patient developed anaphylactic shock. What cells produce mediators in classic anaphylactic reaction?

- a. Mast cells**
- b. Neutrophils
- c. B lymphocytes

- d. Eosinophils
- e. T lymphocytes

64. Because of the violation of the safety rule while working with organophosphorus insecticide, a worker has developed bronchospasm. Which of the listed broncholytics is indicated in this case?

- a. Berotec (Fenoterol)
- b. Ephedrine
- c. Euphyllin (Aminophylline)
- d. Adrenalin
- e. Atropine**

65. To suppress autoimmune response after organ transplantation, a course of hormone therapy is mandatory. What hormones are used for this purpose?

- a. Somatotropin
- b. Adrenaline
- c. Glucocorticoids**
- d. Mineralocorticoids
- e. Sex hormones

66. 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. Spironolactone
- b. Metoprolol
- c. Furosemide**
- d. Clonidine
- e. Enalapril

67. A man has been diagnosed with hydrocele testis. What testicular membrane forms a cavity, inside which the fluid accumulates?

- a. Fascia spermatica externa
- b. Tunica vaginalis testis**
- c. Tunica dartos
- d. Fascia spermatica interna
- e. Tunica albuginea

68. A 2-year-old child drank eyedrops from the first-aid kit. The child's condition is severe: there are excessive sweating and salivation, asthmatic breathing, cough, pinpoint pupils, dull heart sounds, and bradycardia. The child has diarrhea, the intestinal peristalsis is intensified, the blood pressure is low. What drug has caused the poisoning?

- a. Pilocarpine hydrochloride**
- b. Sulfacyl-sodium (Sulfacetamide)
- c. Atropine
- d. Anaprilin (Propranolol)
- e. Platyphylline hydrotartrate

69. Cases of tonsillitis are observed among the children at a boarding school. Microscopy of smears from the tonsils, stained using the Neisser method, detects thin yellow bacilli with dark brown granules at their ends, arranged in the form of the Roman numeral five. What infection can be suspected in this case?

- a. Infectious mononucleosis
- b. Listeriosis
- c. Scarlet fever
- d. Tonsillitis
- e. Diphtheria**

70. 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. Killer T-cells
- c. Helper T-cells**
- d. Macrophages
- e. B-lymphocytes

71. A 57-year-old woman died of acute cardiopulmonary failure. On autopsy the pathologist suspects fat embolism of the pulmonary artery. What stain should be applied to microslides to confirm this diagnosis?

- a. Picrofuchsin
- b. Methylene blue
- c. Sudan III**
- d. Congo red
- e. Hematoxylin and eosin

72. For a short surgical procedure, the patient was given droperidol and fentanyl. What effect results in a loss of pain sensitivity, if they are taken together?

- a. Potentiation**
- b. Antagonism
- c. Chemical interaction
- d. Cumulation
- e. Summation

73. 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. Mummification
- b. Coagulation necrosis
- c. Moist gangrene**
- d. Sequestrum
- e. Dry gangrene

74. 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. Phantom pain
- b. Referred pain
- c. Somatic pain
- d. Causalgia**
- e. Projected pain

75. In diabetes, ketone bodies are synthesized in the liver from acetyl-CoA. Acetyl-CoA forms in the process of breakdown of a certain compound. Name this compound.

- a. Fatty acids**
- b. Glycerin
- c. Lactate
- d. Glycogenic amino acids
- e. Glucose

76. 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. Aldosterone
- b. Secretin
- c. Cholecystokinin
- d. Thyroxine
- e. Adrenaline**

77. A patient with severe spinal cord damage caused by a missile injury has been diagnosed with transection of the right half of the spinal cord (Brown-Sequard syndrome). What type of sensitivity loss occurs in this syndrome?

- a. Pain - on the right
- b. Proprioceptive - on the right**
- c. Tactile - on the right
- d. -
- e. Proprioceptive - on the left

78. Gastric microflora tends to be scarce due to the acidity of the stomach contents. However, H. pylori is able to survive in the stomach, because of production of a certain enzyme. Name this enzyme:

- a. Protease
- b. Lipase
- c. Hyaluronidase
- d. Urease**
- e. Adenylate cyclase

79. Measuring the transaminase activity is widely used to diagnose the damage to internal organs. The active form of a certain vitamin is a cofactor of these enzymes. Name this vitamin.

- a. B<sub>1</sub>
- b. PP
- c. B<sub>12</sub>
- d. B<sub>6</sub>**
- e. B<sub>2</sub>

80. Pepsin is the enzyme of gastric juice that is secreted in its inactive form of pepsinogen. What is the mechanism of its activation?

- a. Methylation
- b. Dephosphorylation
- c. Limited proteolysis**
- d. Acetylation
- e. Phosphorylation

81. A 12-year-old child has a relatively short stature with disproportionate built and mental retardation. What hormone or hormones can cause this condition, if underproduced?

- a. Insulin
- b. Mineralocorticoids
- c. Thyroid hormones**
- d. Glucocorticoids
- e. Growth hormone

82. 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. Decarboxylation of amino acids
- c. Deamination of amino acids
- d. Anaerobic glycogenolysis
- e. Gluconeogenesis

83. 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. Smooth endoplasmic reticulum
- b. Postlysosomes
- c. Mitochondria
- d. Centrosomes
- e. Ribosomes**

84. A patient presents with a decreased excitation conduction velocity in the atrioventricular node. What ECG component will have an increased duration in this case?

- a. ST segment

- b. QRS complex
- c. R wave
- d. RR interval

**e. PQ interval**

85. Calcium phosphate crystals form the basis of the inorganic structure of teeth. What hormone regulates calcium homeostasis?

**a. Parathyroid hormone**

- b. Vasopressin
- c. Testosterone
- d. Adrenaline
- e. Aldosterone

86. A patient has a pancreatic tumor. During surgery it was accessed by making an opening through the lig. gastrocolicum, but in the process a vessel passing through this ligament was damaged. As a result the surgeon had to stop the bleeding from the following vessel:

- a. A. pancreatoduodenalis superior
- b. A. gastrica dexter

**c. A. gastroomentalis dexter**

- d. A. gastrica sinister
- e. A. gastro-duodenalis

87. The causative agent of tuberculosis can exist both intracellularly and extracellularly, as well as in caseous necrosis. What drug can have a harmful effect on Mycobacterium tuberculosis of any localization?

a. Isoniazid

**b. Rifampicin**

- c. Sodium aminosalicylate
- d. Streptomycin
- e. Ethambutol

88. A patient has an asymmetrically distorted face and a dry eye. What nerve is likely to be damaged in this case?

- a. Accessory nerve
- b. Hypoglossal nerve
- c. Maxillary nerve

**d. Facial nerve**

e. Mandibular nerve

89. 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. Septicemia
- d. Black pox (hemorrhagic smallpox)
- e. Hemolytic anemia

90. A patient came to the dentist with complaints of suppurative inflammation of the gums. What drug will be the most effective if the causative agent is suspected to be anaerobic?

- a. Gentamicin
- b. Oxacillin sodium
- c. Nitroxoline
- d. Co-trimoxazole

**e. Metronidazole**

91. A 15-year-old patient is being treated for severe hyperbilirubinemia. Barbiturates are included in the complex of drugs prescribed for treatment. They induce synthesis of the following substance in

the liver:

- a. Indirect hemoglobin
- b. Hemoxygenase
- c. Biliverdin
- d. Verdoglobin
- e. UDP-glucuronyltransferase**

92. After eating homemade canned meat, a student developed signs of food poisoning caused by *Clostridium botulinum*: diplopia, speech disturbance, and respiratory paralysis. What causes these signs in botulism?

- a. *Cl. botulinum* invasion of intestinal epithelium
- b. Neurotoxin action**
- c. Endotoxic shock
- d. Adenylate cyclase activation
- e. Enterotoxin secretion

93. A patient with pale skin, low body temperature, weak and shallow pulse, and low blood pressure was brought to the admission room. These signs are characteristic of acute morphine poisoning. What drug should be administered first in this case?

- a. Adrenaline hydrochloride
- b. Isadrine (Isoprenaline)
- c. Codeine sulfate
- d. Atropine sulfate
- e. Naloxone**

94. A woman periodically has arterial hypertension attacks, accompanied by headaches, palpitations, markedly excessive sweating, sharp pain in the epigastric region, and elevated glucose levels in blood plasma. High levels of metanephrines were detected in blood plasma and urine. What neoplastic disorder can be most likely characterized by these symptoms?

- a. Stomach cancer
- b. Pheochromocytoma**
- c. Parathyroid adenoma
- d. Thyroid adenoma
- e. Ovarian tumor

95. After eating canned mushrooms, a person developed signs of bulbar paralysis: ptosis, diplopia, aphonia, difficulty swallowing. Provisionally, this person was diagnosed with botulism. What reaction can be used in this case to determine the type of toxin?

- a. Neutralization**
- b. Complement fixation
- c. Precipitation
- d. Agglutination
- e. Immunofluorescence

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

- a. Ketotifen
- b. Tavegil (Clemastine)
- c. Dimedrol (Diphenhydramine)
- d. Diazolin (Mebhydrolin)
- e. Loratadine**

97. 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 in this case:

- a. Increased duration of action potential
- b. Decreased duration of action potential
- c. Increased conduction velocity in the AV node

**d. Hyperpolarization of cardiomyocyte membranes**

e. Depolarization of cardiomyocyte membranes

98. 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. Allergic reaction**

b. Toxic effect

c. Tachyphylaxis

d. Drug dependence

e. Tolerance

99. 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. VII

b. VI

c. V

d. IV

**e. III**

100. Poisoning with botulinum toxin causes blockade of neuromuscular transmission due to inhibition of the calcium ion influx into the nerve endings of axons of motoneurons. What poses the immediate danger to the patient's life and can result in death in such cases?

a. Cardiac arrest

b. Development of hypovolemic shock

c. Acute disruption of vascular tone regulation

**d. Respiratory arrest**

e. Development of collapse

101. Histology of intrathoracic lymph nodes revealed epithelioid cell granulomas without signs of caseous necrosis. Such a granuloma consists of highly differentiated mononuclear phagocytes (epithelioid and giant cells) and lymphocytes. The central part of the granuloma consists mainly of CD4+ lymphocytes, while CD8+ lymphocytes are present in the peripheral zone. What disease can be characterized by the detected changes?

**a. Sarcoidosis**

b. Hodgkin's lymphoma

c. Lymphosarcoma

d. Acute lymphadenitis

e. Tuberculosis

102. A stillborn child was born with underdeveloped auricles and thickened, inelastic skin that resembled a turtle shell. Histology detects excessive skin keratinization and atrophy of the stratum granulosum in the epidermis. There are no inflammatory changes. What disease can be suspected in this case?

a. Leukoplakia

**b. Ichthyosis**

c. Dermatomyositis

d. Xeroderma

e. Erythroplakia

103. A brown neoplasm 0.5 cm in diameter was detected in the skin sample 1x2 cm in size that was sent for histological testing. Microscopy shows that the tumor consists of cells in the form of cords and nests located in the dermis, with a brown pigment in the cytoplasm, which produces negative results of Perls reaction. What pigment has been detected in this case?

a. Hematoidin

**b. Melanin**

c. Hemosiderin

- d. Bilirubin
- e. Hemomelanin

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

- a. Collagen**
- b. Transferrin
- c. Albumin
- d. Ceruloplasmin
- e. Antitrypsin

105. To test donor blood for hepatitis B antigens, it is necessary to use highly sensitive detection methods. What test should be used for this purpose?

- a. Solid-phase enzyme-linked immunosorbent assay**
- b. Indirect hemagglutination
- c. Indirect immunofluorescence
- d. Complement binding
- e. Immunoelectrophoresis

106. 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. Insulin
- b. Vasopressin**
- c. Noradrenaline
- d. Glucagon
- e. Atrial natriuretic factor

107. Spirogram analysis shows decreased depth and frequency of respirations in the person, which in turn leads to decrease in the:

- a. Vital capacity of lungs
- b. Respiratory minute volume**
- c. Residual volume
- d. Inspiratory reserve volume
- e. Expiratory reserve volume

108. A young person developed a painless neoplasm without clear boundaries in the soft tissues of the left thigh. A biopsy material of the tissues shows that the neoplasm consists of immature fibroblasts. Make the diagnosis.

- a. Myosarcoma
- b. Myoma
- c. Fibroma
- d. Cancer
- e. Fibrosarcoma**

109. A patient diagnosed with acute respiratory failure underwent artificial lung ventilation at a high partial pressure of oxygen, as a result of which the patient's condition became worse and the patient developed a respiratory distress syndrome. What is the likely cause of this complication?

- a. Fibrosis
- b. Blood stasis in the lungs
- c. Inflammatory process
- d. Atelectasis
- e. Intensive oxidation of lung surfactant**

110. 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. -
- c. Vascular neoplasms
- d. Endovasculitis

**e. Damage to elastic fibers**

111. Human genetic apparatus consists of approximately 30 thousand of genes, while the number of antibody variants can be as high as millions. What mechanism leads to formation of new genes that ensure the synthesis of such a number of antibodies?

- a. Formation of Okazaki fragments
- b. Gene amplification
- c. DNA replication

**d. Genetic recombination**

- e. DNA repair

112. After a tibial fracture, the patient presents with excessive bone tissue production (exostosis). What type of regeneration is observed in this case?

- a. Pathological insufficient
- b. -

**c. Pathologically excessive**

- d. Physiological
- e. Reparative

113. Alveoli of the lungs have special cells, through which gas exchange occurs. These cells are a part of the blood-air barrier. Name these cells.

- a. Alveolar macrophages
- b. Microvillous epithelial cells
- c. Clara cells

**d. Alveolar type I cells**

- e. Alveolar type II cells

114. With age, a person develops presbyopia (farsightedness). Why does it happen?

- a. Shortening of the eyeball
- b. Clouding of the lens

**c. Decreased elasticity of the lens**

- d. Retinal atrophy
- e. Elongation of the eyeball

115. 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. Angiotensin II**

- b. Glucagon
- c. Kallidin
- d. Insulin
- e. Antidiuretic hormone

116. A tired driver took a rest in the car with its engine running. As a result, he developed carbon monoxide poisoning. What compound formed in his blood, leading to severe consequences?

**a. Carboxyhemoglobin**

- b. Deoxyhemoglobin
- c. Fetal hemoglobin
- d. Carbaminohemoglobin
- e. Methemoglobin

117. ECG of a man shows an increased duration of the QT interval. It may be due to a decrease in the speed of the following in the ventricles:

- a. Contraction
- b. Repolarization
- c. Depolarization

**d. Depolarization and repolarization**

**e. Relaxation**

118. 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. Chlamidia pneumoniae
- b. Legionella pneumophila
- c. Streptococcus pneumoniae

**d. Mycoplasma pneumoniae**

- e. Klebsiella pneumoniae

119. During a surgery for gallstones in bile ducts, the surgeon must find the common hepatic duct. It is located between the layers of the following ligament:

**a. Hepatoduodenal ligament**

- b. Round ligament of the liver
- c. Ligamentum venosum
- d. Hepatogastric ligament
- e. Hepatorenal ligament

120. A 32-year-old woman complains of infertility, irregular menstrual cycle, chronic anovulation, and polycystic ovaries. Bimanual examination detects enlarged dense ovaries 5x6 cm on the both sides. The same data were confirmed by ultrasound. Histology reveals a thick fibrous capsule surrounding the ovary that covers countless cystic follicles, lined with granulosa cells that have a hyperplastic luteal inner membrane (theca). No corpora lutea could be detected. What has caused this condition in the patient?

- a. Adrenogenital syndrome
- b. Chronic bilateral adnexitis
- c. Androblastoma of the ovaries

**d. Polycystic ovary syndrome (Stein-Leventhal syndrome)**

- e. Premenstrual syndrome

121. Microtraumas of oral mucosa occur daily during eating. However, bleeding in such cases quickly stops because of:

- a. Heparin
- b. Lysozyme
- c. Mucin
- d. Heparin anti-factor

**e. Thromboplastin**

122. A 24-year-old woman was hospitalized with complaints of headache, lumbar pain, face edema, and general weakness. One month ago she had a case of tonsillitis. On admission into the hospital her blood pressure is 180/110 mm Hg. In urine: marked proteinuria, microhematuria, leukocyturia. What type of hypertension is it?

- a. Endocrine hypertension
- b. Essential hypertension
- c. Hypertensive disease
- d. Primary hypertension

**e. Renal hypertension**

123. 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. Obstructive jaundice**

- b. Jaundice of the newborn
- c. Gilbert's syndrome
- d. Hemolytic jaundice

e. Parenchymatous jaundice

124. After chronic pneumonia a patient developed pulmonary fibrosis. What indicator of pulmonary ventilation will be the most affected in this case?

- a. Residual volume will increase
- b. Vital capacity will decrease**
- c. Expiratory reserve volume will increase
- d. Functional residual capacity will increase
- e. Inspiratory reserve volume will increase

125. A culture of tumor cells was treated with colchicine that blocks the formation of tubulin proteins that form the division spindle. What stages of the cell cycle will become disturbed as a result?

- a. Synthetic phase
- b. Postsynthetic phase
- c. Presynthetic phase
- d. Mitosis**
- e. G<sub>0</sub> phase

126. Cellular cytoplasm has high levels of aminoacyl-tRNA synthetase enzyme. What process in the cell is provided by this enzyme?

- a. Repair
- b. Replication
- c. Transcription
- d. Amino acid activation**
- e. Elongation

127. 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. Antibody-dependent cytotoxicity
- b. Cellular cytotoxicity**
- c. Granulomatosis
- d. Immune complex cytotoxicity
- e. Anaphylactic reaction

128. Analysis of a clear lemon-yellow liquid obtained from a patient via abdominal tap shows the following: relative density - 1012, albumin - 1%, globulins - 0.2%, no fibrinogen, leukocytes - 1-3 in the vision field. The liquid is sterile; it did not curdle after an hour. Which of the listed phenomena is associated with such findings?

- a. Peritoneal inflammation
- b. Peritonitis
- c. Peritoneal empyema
- d. Edematous form of hemolytic disease of the newborn
- e. Ascites caused by blood stagnation in the portal system**

129. A 25-year-old woman, who gave birth one month ago, complains of decreased lactation. What hormone is deficient in this case, causing this condition?

- a. Somatostatin
- b. Prolactin**
- c. Adrenocorticotrophic hormone
- d. Glucagon
- e. Insulin

130. A patient was prescribed atropine sulfate for relief of intestinal colic. What condition can be a contraindication for the prescription of this drug?

- a. Hypotension
- b. Glaucoma**
- c. Sinus bradycardia
- d. Vertigo

e. Bronchial asthma

131. A 49-year-old patient presents with increased levels of uric acid in the blood. The doctor prescribed the patient allopurinol to reduce the levels of uric acid. Allopurinol is a competitive inhibitor of a certain enzyme. Name this enzyme.

- a. Hypoxanthine phosphoribosyltransferase
- b. Guanine deaminase
- c. Adenine phosphoribosyltransferase
- d. Adenosine deaminase

**e. Xanthine oxidase**

132. During a brain surgery, it was noted that stimulation of certain areas of the cortex of the large hemispheres caused the patient to experience both tactile and thermal sensations. What area of the cortex was stimulated in this case?

- a. Superior lateral gyrus
- b. Parahippocampal gyrus

**c. Postcentral gyrus**

- d. Precentral gyrus
- e. Cingulate gyrus

133. A 35-year-old woman came for a follow-up visit two weeks after a case of COVID-19. ECG detects a decrease in the voltage of the waves, the P wave is unchanged and connected to the QRS complex, the duration of the PQ interval is 0.32 seconds. What type of arrhythmia did the patient develop?

- a. Second-degree atrioventricular block
- b. Sinoatrial block
- c. Third-degree atrioventricular block
- d. Wolff-Parkinson-White syndrome

**e. First-degree atrioventricular block**

134. The height of a 10-year-old child is 178 cm, while the child's weight is 64 kg. What endocrine gland is dysfunctional in the child, causing this condition?

a. Gonads

**b. Pituitary gland**

- c. Thyroid gland
- d. Adrenal glands
- e. Parathyroid gland

135. 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. Digestion of proteins
- b. Absorption of amino acids
- c. Digestion of carbohydrates
- d. Glycerin absorption

**e. Emulsification of fats**

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

- a. Statins
- b. Liberins

**c. Endorphins**

- d. Oxytocin
- e. Vasopressin

137. Slow filling of the stomach or urinary bladder, without exceeding the physiological norm, causes no increased pressure in these organs. This phenomenon is based on the following ability of the smooth muscles:

- a. Excitability
- b. Contractility
- c. Automatism

d. Plasticity

e. Refractoriness

138. A 35-year-old parturient woman is diagnosed with a pain syndrome associated with a delay in the first stage of labor. What medicine would be optimal for pain relief in this case?

a. Promedol (Trimeperidine)

b. Analgin (Metamizole)

c. Morphine

d. Codeine

e. Ketamine

139. Numerous effects of the growth hormone occur due to certain proteins that form in the liver in response to the action of somatotropin. Name these proteins:

a. Atriopeptins

b. G proteins

c. Lipotropins

d. Somatomedins

e. Endorphins

140. Insufficient production of mineralocorticoids (Addison disease) is accompanied by muscle weakness caused by increased excretion of the following ions with urine:

a. Hydrogen

b. Magnesium

c. Calcium

d. Potassium

e. Sodium

141. A sputum sample obtained from a patient hospitalized with severe pneumonia was cultured on the meat-peptone agar, which resulted in growth of rough colonies with uneven edges. Microscopy has detected large Gram-positive bacilli that were arranged in a chain and contained spores. What pathogen has such characteristics?

a. Klebsiella pneumoniae

b. Mycobacterium tuberculosis

c. Bacillus anthracis

d. Bordetella pertussis

e. Streptococcus pneumoniae

142. A patient with inoperable lung cancer accompanied by unbearable pain was prescribed an analgesic. Against the background of analgesic therapy the patient developed signs of intestinal obstruction. What analgesic could have caused this complication?

a. Morphine

b. Promedol (Trimeperidine)

c. Omnopon (Papaveretum)

d. Fentanyl

e. Analgin (Metamizole)

143. A patient with an infectious disease is sensitized to benzylpenicillin. What antibiotic will be the safest for this patient?

a. Ampicillin

b. Bicillin

c. Azithromycin

d. Amoxicillin

e. Oxacillin

144. Hereditary disorders of methionine metabolism manifest in children as neurological disorders, delayed psychomotor development, visual impairment, and scoliotic posture. Elevated levels of a certain amino acid that is a toxic intermediate metabolite of methionine can be detected in urine and blood in such cases. Name this amino acid.

a. Taurine

**b. Homocysteine**

- c. Cystine
- d. Cysteine
- e. Serine

145. Autopsy of the body of a 56-year-old man detected several ulcers from 4 to 5 cm in size in the terminal portion of the small intestine. There are numerous oval structures up to 5 cm in their longest part, with the surface that resembles cerebral cortex. Ulcer margins are raised above the mucosa, while ulcer walls are covered in gray-yellow crumbling masses. Widal test is positive. Make the diagnosis:

- a. Crohn disease
- b. Relapsing fever
- c. Dysentery

**d. Typhoid fever**

- e. Paratyphoid

146. A 30-year-old man complains of abdominal pain and diarrhea that persist for 5 days already, chills, and fever of 37.5°C. The day before, he was in a forest, where he was drinking from an open body of water. Bacteriology confirmed the diagnosis of amebic dysentery. What is the drug of choice for the treatment of this condition?

- a. Phthalazol (Phthalylsulfathiazole)
- b. Emetine hydrochloride
- c. Furazolidone

**d. Metronidazole**

- e. Levomycetin (Chloramphenicol)

147. A patient presents with a disturbed act of swallowing, hoarse voice, regurgitation of liquid foods, and drooping soft palate. What nerves innervate the muscles of the soft palate?

- a. Facial nerve and buccal nerve

**b. Vagus and mandibular nerve**

- c. Cervical plexus
- d. Glossopharyngeal nerve and facial nerve
- e. Glossopharyngeal nerve and hypoglossal nerve

148. Examination of a patient, who came to the neurology department, detected smoothing-out of the frontal folds, inability to squint, lowered corner of the mouth, and the "sail" sign (the cheek passively puffs during breathing). What nerve is damaged in this case?

- a. Trigeminal
- b. Vagus

**c. Facial**

- d. Oculomotor
- e. Accessory

149. In the human body, reserves of hydrocarbons are localized mainly in the liver and skeletal muscles. Which reserve becomes mobilized to maintain blood glucose levels during fasting?

**a. Hepatic glycogen**

- b. Cellulose
- c. Starch
- d. Muscle glycogen
- e. Amylopectin

150. An oncology patient is to undergo a surgery on the descending colon. Name the main source of the blood supply to this organ:

- a. Splenic artery

**b. Inferior mesenteric artery**

- c. Middle colic artery
- d. Celiac trunk
- e. Superior mesenteric artery

151. In an experiment on lab rats, electrical brain stimulation caused hungry animals to refuse food. What brain structure was stimulated?

- a. Lateral hypothalamic area
- b. Globus pallidus
- c. Amygdaloid nuclei
- d. Ventromedial nucleus of the hypothalamus**
- e. Hippocampus

152. 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. Thyrotoxicosis
- d. Myxedema**
- e. Thyroprival cachexia

153. A woman came to a doctor with complaints of redness and itching of the skin of her face after using a cosmetic cream. She was prescribed diphenhydramine. What is the mechanism of antiallergic action of this drug?

- a. Inhibition of leukotriene receptors
- b. Stimulation of beta-adrenoreceptors
- c. Stimulation of H<sub>1</sub>-histamine receptors
- d. Blockade of H<sub>1</sub>-histamine receptors**
- e. Blockade of H<sub>2</sub>-histamine receptors

154. A man had a trauma and subsequent hemorrhagic bursitis of the left knee joint. When he was examined 3 months later, he had a limited range of motion in this joint because of scar formation. What component of inflammation is the basis for the development of this complication?

- a. Primary alteration
- b. Secondary alteration
- c. Exudation
- d. Proliferation**
- e. Disturbed microcirculation

155. A patient with chronic renal failure presents with the inulin clearance decreased to 60 mL/min. What kidney function is disturbed in this case, causing this phenomenon?

- a. Tubular secretion
- b. Reabsorption in the distal part of the nephron
- c. Reabsorption in the collecting tubules of the kidney
- d. Glomerular filtration**
- e. Reabsorption in the proximal part of the nephron

156. Histology of a skin tumor detects adipose tissue particles of varying size, separated by irregular layers of connective tissue. What disease can be characterized by such pathological changes?

- a. Hygroma
- b. Hemangioma
- c. Papilloma
- d. Fibroma
- e. Lipoma**

157. A patient in the infectious diseases unit presents with elevated temperature up to 39°C. ECG shows shortened R-R interval, P wave precedes each QRS complex. Heart rate is 120/min. What characteristic of the cardiac muscle is disturbed, causing the development of this pathological rhythm?

- a. Conductivity and rhythm assimilation
- b. Automatism**

- c. Conductivity
- d. Automatism and conductivity
- e. Rhythm assimilation

158. Submicroscopy of a cell shows that its cytoplasm contains many lysosomes, phagosomes, and pinocytotic vesicles. Other organelles are moderately developed. What function can such a cell perform?

- a. Synthesis of polysaccharides
- b. Reabsorption of sodium ions
- c. Phagocytosis**
- d. Deposition of calcium ions
- e. Synthesis of lipids

159. 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. musculocutaneus**
- c. N. radialis
- d. N. ulnaris
- e. N. medianus

160. In molecular biology, a method is used that allows determining the sequence of nucleotides in a DNA molecule based on the amino acid composition of the polypeptide. This method uses the following property of the genetic code:

- a. Non-overlapping
- b. Specificity
- c. Collinearity**
- d. Degeneracy
- e. Universality

161. 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. Oxidase activity
- b. Urease activity**
- c. Capsule formation
- d. Resistance to vancomycin
- e. Catalase activity

162. A 63-year-old man, according to his relatives, had three episodes of unconsciousness. His respiration rate is 18/min., heart rate - 45/min., blood pressure - 100/70 mm Hg. ECG shows that the frequency of P waves is 80/min., while the frequency of ventricular complexes is 42/min. What type of arrhythmia is the most likely in this case?

- a. Complete AV block**
- b. Sinoauricular block
- c. Sinus bradycardia
- d. II degree AV block
- e. I degree AV block

163. In an experiment, an extracellular potassium concentration was increased until it became equal to the intracellular potassium concentration, which resulted in the loss of cellular excitability. What electrophysiological process occurred in this case?

- a. Sodium efflux from the cell increases and depolarization develops
- b. Potassium efflux from the cell stops and resting potential disappears**
- c. Potassium influx to the cell increases and local response develops
- d. Potassium efflux from the cell increases and hyperpolarization develops
- e. Potassium efflux from the cell decreases and hyperpolarization develops

164. Autopsy of the body of a woman who died of uremia revealed that the kidneys differed in size,



their surface had large tubercles, and there were dense commissures between the renal surface and the renal capsule. Microscopically, the following is observed in the renal tissues: encapsulated abscesses, proliferation of connective tissue with lymphohistiocytic infiltration, metaplastic foci where transitional epithelium transforms into stratified epithelium, dystrophy and atrophy of the tubules. What is the most likely diagnosis in this case?

- a. Tubulointerstitial nephritis
- b. Acute pyelonephritis
- c. Acute glomerulonephritis
- d. Chronic pyelonephritis**
- e. Chronic glomerulonephritis

165. The mother complains that her 7-month-old child has recurrent bacterial infections, such as conjunctivitis, otitis, sinopulmonary infections, diarrhea, and skin infections. Examination detects reduced size of the child's tonsils and lymph nodes. In the blood, examination of serum immunoglobulins shows noticeably reduced levels of IgM, IgA, and IgE, IgG is less than 100 mg/dL. What disease can be characterized by these pathological changes?

- a. Hypogammaglobulinemia
- b. X-linked agammaglobulinemia (Bruton disease)**
- c. DiGeorge syndrome
- d. Hereditary adenosine deaminase defect in T lymphocytes
- e. Wiskott-Aldrich syndrome

166. One of the functions of central inhibition is the selection and reduction of the sensory information influx to the cerebral cortex. What type of inhibition performs this function?

- a. Pessimal inhibition
- b. Presynaptic inhibition**
- c. Reciprocal inhibition
- d. Lateral inhibition
- e. Inverse inhibition

167. 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. Hypoxia
- b. Circulatory dysfunction
- c. Disturbed cortical processes in the brain
- d. Hypothalamic damage**
- e. Peripheral microcirculatory dysfunction

168. 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. Glucagon
- b. Progesterone
- c. Thyroxine
- d. Adrenaline**
- e. Insulin

169. 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. Recirculation of excitation
- b. Temporal summation of excitation
- c. Spatial summation of excitation**
- d. Excitation radiation by divergent nerve circuits
- e. Principle of dominance

170. When examining a patient, the neurologist determined the absence of the knee-jerk reflex that

normally occurs, when patellar tendon is being struck with a reflex hammer. What nerve is likely to be damaged in this case?

- a. Obturator nerve
- b. Gluteal nerve
- c. Femoral nerve**
- d. Common fibular nerve
- e. Tibial nerve

171. Histological slides of spleen and lymph node show enlargement of lymphoid tissue, which can indicate activation of immune responses. Where in these organs can be found a zone of antigen-independent proliferation and differentiation of B lymphocytes (B zone)?

- a. Brain sinuses
- b. Paracortical zone
- c. Mantle zone
- d. Periarterial zone
- e. Germinal center of a lymph node**

172. A child underwent a tuberculin skin test (Mantoux test). 48 hours later the child developed a papule reaching 10 mm in diameter at the injection site. These changes are caused by the following mechanism of hypersensitivity:

- a. Anaphylaxis
- b. Cellular cytotoxicity**
- c. Antibody-dependent cytotoxicity
- d. Immune complex cytotoxicity
- e. Granulomatosis

173. There are several stages in the process of translation. At one of these stages, a complex forms that consists of a ribosome, mRNA, and aminoacyl-tRNA-methionine. What is the name of this stage?

- a. Termination
- b. Initiation**
- c. Transcription
- d. Repair
- e. Elongation

174. A patient developed signs of mucosal inflammation in the anterior and middle ethmoidal cells. Through what structure of the nasal cavity was the infection able to spread in this case?

- a. Choanae
- b. Inferior nasal meatus
- c. Common nasal meatus
- d. Superior nasal meatus
- e. Middle nasal meatus**

175. A patient was administered a certain drug for relief of cardiac rhythm disturbance. This drug can be used as a local anesthetic as well. Name this drug:

- a. Anaesthesin (Benzocaine)
- b. Lidocaine hydrochloride**
- c. Diphenine (Phenytoin)
- d. Cocaine hydrochloride
- e. Dicain (Tetracaine)

176. A person with carbon monoxide (CO) poisoning developed headache, shortness of breath, and dizziness. These signs are caused by a drop in blood levels of a certain compound. Name this compound:

- a. Oxyhemoglobin**
- b. Deoxyhemoglobin
- c. Carboxyhemoglobin
- d. Methemoglobin
- e. Carbaminohemoglobin

177. 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. Thymus
- b. Pituitary gland
- c. Adrenal cortex
- d. Pineal gland

**e. Parathyroid glands**

178. A patient presents with acute attack of cholelithiasis. What in this case will show the laboratory examination of the patient's feces?

- a. Starch granules
- b. Positive reaction to stercobilin
- c. Connective tissue
- d. Partially digested cellulose

**e. Negative reaction to stercobilin**

179. 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. Prothrombinase formation

**b. Thrombin formation**

- c. Fibrinolysis
- d. Clot retraction
- e. Fibrin formation

180. In an acute test, a narcotized dog received vasopressin, which resulted in decreased urine output, because this substance:

- a. Increases calcium reabsorption
- b. Decreases water reabsorption
- c. Decreases calcium reabsorption

**d. Increases water reabsorption**

- e. Increases sodium reabsorption

181. In an 8-year-old child with purulent otitis media, the infection has spread from the tympanic cavity to the jugular bulb. This complication develops if one of the walls of the tympanic cavity has thinned. What wall is most likely to have an anomaly in this child?

- a. Lateral wall
- b. Superior wall
- c. Anterior wall

**d. Inferior wall**

- e. Medial wall

182. A patient diagnosed with AIDS has a tumor on his leg. The tumor slightly protrudes above the skin and looks like a painless spot. Histologically, the removed tumor can be characterized by incomplete angiogenesis, proliferation of spindle-shaped cells that form chaotically intertwined bundles, and growth of granulation tissue of varying maturity with infiltration by immunocompetent cells. Vascular proliferates are surrounded by edematous loose connective tissue. There are hemosiderin deposits. What is the most likely diagnosis in this case?

- a. Angiofibrosarcoma
- b. Fibrosarcoma
- c. Hemangioendothelioma

**d. Kaposi's sarcoma**

- e. Malignant pericytoma

183. 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. Tactile sensitivity

**b. Proprioceptive sensitivity**

- c. Pain sensitivity
- d. Thermal sensitivity
- e. -

184. The patient has lost tactile and thermal sensitivity because of a head injury. What gyrus was damaged in the brain in this case?

- a. Supramarginal gyrus
- b. Angular gyrus
- c. Cingulate gyrus
- d. Precentral gyrus
- e. Postcentral gyrus**

185. A patient with an acute myocardial infarction has been prescribed an anticoagulant therapy. What indicator of the blood coagulation system must be measured, when taking heparin, to prevent possible complications caused by its overdose?

- a. Activated partial thromboplastin time
- b. Prothrombin time**
- c. International normalized ratio
- d. Fibrinogen concentration
- e. ESR

186. During the study of digestive processes in vitro, a swelling of the protein substrate was observed. What component of gastric juice enables such protein transformation?

- a. Pepsin
- b. Hydrochloric acid**
- c. Mucus
- d. Gastrixin
- e. Trypsin

187. Utilization of arachidonic acid along the cyclooxygenase pathway produces bioactive substances. Name them:

- a. Thyroxine
- b. Biogenic amines
- c. Prostaglandins**
- d. Somatomedins
- e. Insulin-like growth factors

188. As proposed by the World Health Organization, diabetes mellitus is divided into type 1 and type 2. What is the etiological factor of type 1 diabetes mellitus?

- a. Damage to the pituitary gland
- b. Strong bond between insulin and protein
- c. High insulinase activity
- d. Damage to beta-cells**
- e. Absence of insulin receptors

189. Cysteine plays a special role because it is a component of a potent antioxidant that consists of three amino acids and can undergo reverse transformation from its reduced form into its oxidized form, maintaining the reduced state of SH-groups of various enzymes and bioregulators. Name this antioxidant.

- a. Tocopherol
- b. Anserine
- c. Glutathione**
- d. Carnosine
- e. Retinol

190. 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. Substantia nigra

**b. Hypothalamus**

c. Reticular formation

d. Thalamus

e. Red nucleus

191. Blood test of the patient revealed albumin content of 20 g/L and increased activity of lactate dehydrogenase isoenzyme 5 (LDH<sub>5</sub>). The disorder of which organ indicate these results?

**a. Liver**

b. Spleen

c. Kidneys

d. Heart

e. Lungs

192. 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. Plague

**b. Cytomegalovirus infection**

c. Syphilis

d. Leprosy

e. Tuberculosis

193. 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. Streptokinase**

b. Chymotrypsin

c. Lysozyme

d. Trypsin

e. Hyaluronidase

194. After a craniocerebral trauma, the patient has lost the ability to read and understand written text (alexia). Name the location of the corresponding center in the cerebral cortex:

a. Gyrus supramarginalis

b. Gyrus lingualis

c. Gyrus paracentralis

**d. Gyrus angularis**

e. Gyrus parahippocampalis

195. Electronic microscopy of the pancreatic cells shows the structures that separate the cell into a large number of sections, canals, and cisterns and are connected to plasmalemma. Name these organelles:

a. Mitochondria

**b. Endoplasmic reticulum**

c. Golgi complex

d. Centrosomes

e. Ribosomes

196. During a surgery for inguinal hernia, the surgeon removes the superficial inguinal ring. The majority of its walls are formed by the derivatives of aponeurosis of a certain muscle. Name this muscle:

a. M. rectus abdominis

b. M. transversus abdominis

**c. M. obliquus externus abdominis**

d. M. obliquus internus abdominis

e. M. psoas major

197. When a skeleton muscle cell was exposed to electric current, its membrane depolarized. What ions pass through the membrane, playing the main role in its depolarization?

- a.  $\text{Ca}_2^{+}$
- b.  $\text{K}^{+}$
- c.  $\text{Cl}^{-}$
- d.  $\text{HCO}_3^{-}$
- e.  $\text{Na}^{+}$**

198. 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. Phenylketonuria
- b. Wilson's disease
- c. Maple syrup urine disease**
- d. Fructosuria
- e. Histidinemia

199. Several months after giving birth, a woman became inert, her teeth and hair started falling out and she started losing weight. Her blood pressure, body temperature, and blood glucose are low. Examination shows low blood levels of growth hormone and adrenocorticotrophic hormone. What functional disturbance of pituitary gland is observed in the patient?

- a. Panhypopituitarism**
- b. Diabetes insipidus
- c. Acromegalia
- d. Cushing disease
- e. Hypophyseal nanism

200. 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. Withdrawal syndrome**
- b. -
- c. Accumulation
- d. Tachyphylaxis
- e. Sensitization

201. In ECG analysis, it is necessary to determine the pacemaker of the heart. It can be done by determining:

- a. The amplitude of the P wave
- b. The direction of the P wave**
- c. The amplitude of the R wave
- d. The direction of the R wave
- e. The direction of the Q wave

202. A histological preparation demonstrates a gland. In its lobules there are acini with secretory cells that have two zones. Their basal zone is homogeneous basophilic, while the apical one is zymogenic oxyphilic. What organ has these key morphological features?

- a. Pancreas**
- b. Sublingual salivary gland
- c. Liver
- d. Parotid salivary gland
- e. Submandibular salivary gland

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

- a. Radioimmunoassay is needed for antigen detection
- b. These are simple viruses that affect only humans

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

**e. The presence of reverse transcriptase enzyme**

204. A patient was diagnosed with bronchial asthma. What changes in the patient's pulmonary ventilation will be observed?

- a. Increase of expiratory reserve volume
- b. Decrease of residual volume
- c. Increase of forced expiratory volume
- d. Decrease of forced expiratory volume**
- e. Increase of vital capacity

205. Which biochemical marker indicates that the donor's blood is infected with viral hepatitis B?

- a. HBcAg
- b. HDV
- c. HBsAg**
- d. HAV
- e. HCV

206. Bacteriological analysis of the feces of a 4-month-old child with signs of acute enteric infection was conducted. Inoculation in Endo medium resulted in the growth of a large number of red colonies. What microorganisms are the most likely in this case?

- a. Staphylococci
- b. Streptococci
- c. Escherichia**
- d. Shigellae
- e. Salmonellae

207. A patient has developed status epilepticus. What medicine should be used in this case to stop the seizures?

- a. Sodium bromide
- b. Valerian extract
- c. Diazepam**
- d. Cyclodol (Trihexyphenidyl)
- e. Diprazine (Promethazine)

208. A patient with microspherocytic hemolytic anemia (Minkowski-Chauffard disease) presents with increased permeability of erythrocyte membrane, which causes increased entry of sodium ions and water into the cell. As a result, erythrocytes assume the shape of spherocytes and can be easily destroyed. What is the leading mechanism of erythrocyte damage in this case?

- a. Calcium
- b. Protein
- c. Acidotic
- d. Nucleic
- e. Electrolyte-osmotic**

209. A patient has gradually developed a skin plaque on his face. In the center of this plaque there are necrotic patch and an ulcer. Histopathological analysis of the biopsy material reveals proliferation of atypical epithelial cells with large number of pathologic mitoses. What is the most likely diagnosis?

- a. Trophic ulcer
- b. Fibroma
- c. Sarcoma
- d. Papilloma
- e. Skin cancer**

210. A 27-year-old patient complains of lethargy, rapid mental and physical fatigability, and dyspeptic disorders. Examination revealed positive results of tuberculin tests, hypoglycemia, the blood pressure of 90/60 mm Hg, hyponatremia, and skin hyperpigmentation. What pathology of the adrenal glands is associated with such phenomena?

a. Addison's disease

b. Cushing syndrome

c. Hypofunction of the adrenal medulla

d. Conn's syndrome

e. Acute adrenocortical insufficiency

211. A 1.5-year-old boy constantly suffers from pyoderma and had three cases of pneumonia. In his blood, there are reduced levels of immunoglobulins G and A and no plasma cells. What type of immunodeficiency developed in the child?

a. Wiskott-Aldrich syndrome

b. Thymic hypoplasia

c. Louis-Bar syndrome

d. Swiss-type immunodeficiency

e. Bruton's hypogammaglobulinemia

212. In some diseases, changes occur in the cells, with lysosomal membrane integrity becoming impaired in the process. What changes will occur in the cells as a result?

a. Autolysis

b. Accumulation of substances

c. Impaired transcription

d. Impaired translation

e. Impaired mitosis

213. Bioactive substances hormones are produced as a result of hydrolysis and modification of certain proteins. What protein in the pituitary gland is the source of lipotropin, corticotropin, melanotropin, and endorphin?

a. Neurostromin

b. Thyroglobulin

c. Neuroalbumin

d. Neuroglobulin

e. Proopiomelanocortin (POMC)

214. Examination of the patient's facial expressions detected his inability to pucker his lips or whistle. His oral fissure stretches to the sides (transverse smile). What muscle is atrophied in this case, as indicated by these symptoms?

a. Masseter muscle

b. Buccinator muscle

c. Zygomaticus major muscle

d. Orbicularis oris muscle

e. Risorius muscle

215. In the structure of prokaryotic DNA operons there is a fragment, to which RNA polymerase attaches at the stage of transcription initiation. Name this fragment:

a. Operator gene

b. Promoter

c. Primary transcript

d. Structural gene

e. Regulator gene

216. A 38-year-old woman became acutely ill. Her body temperature increased to 40°C. 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. Typhoid fever

b. Giardiasis

c. Shigellosis



- d. Amoebiasis
- e. Campylobacter-induced enterocolitis

217. On the day before giving birth a woman had ESR of 40 mm/hour. This value of ESR is caused by high blood levels of:

- a. Fibrinogen
- b. Albumins
- c. Erythrocytes
- d. Lipoproteins
- e. Proteins

218. A patient with chronic glomerulonephritis has edema, blood pressure of 210/100 mm Hg, heart rate of 85/min., and expanded border of the heart. What is the main mechanism of arterial hypertension development?

- a. Increased activity of sympathetic nervous system
- b. Hyperfunction of the heart
- c. Increased vasopressin production
- d. Activation of renin-angiotensin- aldosterone system
- e. Increased volume of circulating blood

219. 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. Down syndrome
- c. Patau syndrome
- d. Edwards syndrome
- e. Klinefelter syndrome

220. In the practice of emergency therapy and resuscitation, medical conditions accompanied by edema of brain cells are often encountered. To combat this condition, patients need to be administered substances with a certain effect. What effect do these substances have?

- a. They lower the systemic arterial pressure
- b. They lower the central venous pressure
- c. They change the acid-alkaline balance of the blood
- d. They reduce the volume of the circulating blood
- e. They increase the colloid osmotic blood pressure

221. 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. Aortic constriction
- b. Abdominal constriction
- c. Pharyngeal constriction
- d. Diaphragmatic constriction
- e. Bifurcation constriction

222. A patient presents with tachycardia, increased basal metabolic rate and body temperature, weight loss, and increased excitability. These disorders are caused by the increased secretion of hormones in the:

- a. Thyroid gland
- b. Parathyroid glands
- c. Adrenal glands
- d. Neurohypophysis
- e. Gonads

223. The parents with normal hearing have two daughters and a son, who are congenitally deaf. Their other 5 children are healthy. What is the pattern of deafness inheritance in this case?

- a. Y-linked
- b. X-linked recessive
- c. Autosomal recessive

- d. Autosomal dominant
- e. X-linked dominant

224. 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. Naloxone
- b. Unithiol (Dimercaptopropansulfonate)**
- c. Proserin (Neostigmine)
- d. Atropine sulfate
- e. Alloxim

225. 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. Cardiac cycle
- c. Heart rate
- d. Respiratory rate
- e. Menstrual cycle

226. 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. Secondary amyloidosis**
- b. Senile amyloidosis
- c. Diffuse hyalinosis
- d. Local tumor-like amyloidosis
- e. Idiopathic amyloidosis

227. 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. Doxycycline hydrochloride
- b. Isoniazid
- c. Chingamin (Chloroquine)
- d. Metronidazole**
- e. Aciclovir

228. During periodic medical examination, a person with no health complaints presents with leukocytosis. This sign can be detected if blood sample for the analysis was obtained after:

- a. Physical exertion**
- b. Mental exertion
- c. Rest at a resort
- d. Alcohol drinking
- e. Drinking large amounts of water

229. A patient diagnosed with rheumatoid arthritis had been taking glucocorticoid drugs for several weeks and then suddenly stopped taking them. What complication can develop in this case?

- a. Ulceration of gastric and duodenal mucosa
- b. Increased blood pressure
- c. Withdrawal syndrome**
- d. Hyperglycemia
- e. Exacerbation of chronic infectious processes

230. A 35-year-old man with a hand injury came to the traumatology department. Examination revealed an incised wound on the palmar surface of the left hand; middle phalanges of digits II-IV cannot be flexed. What muscles are damaged?

- a. Flexor digitorum profundus
- b. Flexor digitorum superficialis**

- c. Lumbrical muscles
- d. Dorsal interossei
- e. Palmar interossei

231. A patient is being prepared for a cardiac surgery. Pressure in the heart chambers was measured. In one of these chambers throughout the cardiac cycle this pressure changes from 0 to 120 mm Hg. What heart chamber is it?

- a. Right ventricle
- b. -
- c. Left atrium
- d. Right atrium
- e. Left ventricle**

232. 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 rate of excitation conduction in the working cardiomyocytes
- c. It increases the automaticity of the sinoatrial node
- d. It decreases the rate of excitation conduction in the working cardiomyocytes
- e. It has no effect on the automaticity of the sinoatrial node**

233. 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. trochlearis
- b. N. opticus
- c. N. oculomotorius**
- d. N. abduceus
- e. N. trigeminus

234. Antibiotics (streptomycin, erythromycin, chloramphenicol) are used to treat infectious bacterial diseases. What stage of protein synthesis in the microbial cell do they inhibit?

- a. Processing
- b. Translation**
- c. Splicing
- d. Replication
- e. Transcription

235. Histology of a biopsy material obtained from the liver of a 67-year-old man, who for a long time has been suffering from chronic diffuse obstructive emphysema, revealed the following morphological changes: central veins are dilated; sinusoids in the center of hepatic lobules are hyperemic and exhibit signs of capillarization; a portion of hepatocytes has undergone dystrophic changes; moderate perivascular sclerosis; periportally one can observe hepatocytes with signs of fatty degeneration.

What type of liver damage is it?

- a. Fatty hepatosis
- b. Portal cirrhosis
- c. Nutmeg liver**
- d. Goose liver
- e. Brimstone liver

236. A patient diagnosed with rheumatic myocarditis periodically experiences irregular pulse. The ECG reveals irregular occurrences of idioventricular extrasystoles. What pathogenetic mechanism causes a compensatory pause in this case?

- a. Inhibition of sinus node functioning
- b. Myocardial refractoriness before receiving the next impulse**
- c. Retrograde conduction of excitation to the atria
- d. Disturbed myocardial contractility
- e. Delay of excitation in the atrioventricular node

237. 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. Complement fixation test
- b. Mantoux test
- c. Agglutination test
- d. Thermoprecipitation test**
- e. Hemagglutination inhibition test

238. During the medical examination of students, they underwent a Mantoux test. What specific factors cause a positive reaction, if they are present?

- a. T-lymphocytes**
- b. Leukocytes
- c. B-lymphocytes
- d. Erythrocytes
- e. Antibodies

239. In the process of protein conversion into the active form after biosynthesis, the proteins undergo certain postmodification changes. What change occurs when proinsulin transforms into insulin?

- a. C-peptide detachment**
- b. Formation of several subunits
- c. Acetylation
- d. Prosthetic group binding
- e. Phosphorilation

240. A 36-year-old woman has a moon-shaped face, upper body obesity, stretch marks on the anterior abdominal wall, hirsutism, hyperglycemia, and glycosuria. These symptoms are characteristic of the following disease:

- a. Pheochromocytoma
- b. Conn syndrome
- c. Secondary hyperaldosteronism
- d. Cushing syndrome**
- e. Primary hyperaldosteronism

241. A 50-year-old man diagnosed with chronic diffuse glomerulonephritis developed renal failure. What changes in his laboratory findings indicate impaired renal concentrating ability?

- a. Cylindruria
- b. Hypo- and isosthenuria**
- c. Hematuria
- d. Hypersulfatemia
- e. Hyperazotemia

242. A 33-year-old woman, who for a long time has been treated for chronic polyarthritis, complains of elevated blood pressure, changes in adipose tissue distribution, and disturbed menstrual cycle. What drug does this patient take?

- a. Prednisolone**
- b. Indometacin
- c. Butadion (Phenylbutazone)
- d. Synaflan (Fluocinolone acetonide)
- e. Beclometasone

243. Autopsy of the body of a patient diagnosed with multiple myeloma, who died with signs of heart failure, shows an enlarged heart with enlarged cavities. The myocardium is pale, dense and has a waxy sheen. Microscopically, Congo red staining results in a positive reaction. What is this pathology of the heart?

- a. Tiger heart disease
- b. Hypertensive heart disease
- c. -
- d. Fatty heart**
- e. Cardiac obesity

244. A 38-year-old pregnant woman with a family history of hereditary disorders underwent test for sex chromatin in the cells of amniotic fluid. This test shows that the fetal cells have two sex chromatin bodies (Barr bodies). What disorder are these signs characteristic of?

- a. Down disease
- b. Trisomy X
- c. Patau syndrome
- d. Turner syndrome
- e. Klinefelter syndrome**

245. A 45-year-old woman presents with insufficient secretion of enterokinase enzyme. Enterokinase deficiency can cause disturbance of the following digestive function:

- a. Lipid absorption
- b. Protein hydrolysis**
- c. Lipid hydrolysis
- d. Carbohydrate hydrolysis
- e. Vitamin absorption

246. Examination of a 32-year-old patient detects a disproportional structure of the skeleton and enlarged brow ridges, nose, lips, tongue, jawbones, and feet. What is the likely cause of the development of these disorders?

- a. Increase glucagon levels
- b. Decreased insulin levels
- c. Increase catecholamine levels
- d. Increased levels of somatotrophic hormone**
- e. Increased thyroxine levels

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

248. A newborn baby is vulnerable to infections. What immunoglobulin crosses the placental barrier and provides humoral immunity in the babies?

- a. IgD
- b. IgE
- c. IgM
- d. IgG**
- e. IgA

249. Due to a trauma, the olfactory filaments, emerging from the nasal cavity, were torn. Through what bone do they pass normally?

- a. Cuneiform bone
- b. Maxilla
- c. Ethmoid bone**
- d. Inferior nasal concha
- e. Nasal bone

250. A 30-year-old man came to the dentist with complaints of disturbed chewing and pain that occurs when he moves his jaw backwards. The doctor detected inflammation in one of the masticatory muscles. What muscle is inflamed in this case?

- a. Medial pterygoid
- b. Lateral pterygoid
- c. Temporalis (posterior fibers)**
- d. Masseter

e. Temporalis (anterior fibers)

251. After a hypertensive crisis, a man has lost voluntary movements in his right arm and leg. The muscle tone in these limbs is increased. What type of disorder of the nervous system's motor function is observed in this case?

- a. Central paresis
- b. Central paralysis**
- c. Peripheral paralysis
- d. Peripheral paresis
- e. Reflex paresis

252. Total energy metabolism of a person can be calculated, if the following value is known:

- a. Protein intake
- b. CO<sub>2</sub> release
- c. Lipid intake
- d. Carbohydrate intake
- e. O<sub>2</sub> intake**

253. A 3-year-old child has been brought by ambulance to the intensive care unit of the infectious diseases hospital. On examination the child is in severe condition, skin and mucosa are dry, tissue turgor is reduced. The patient's history states that profuse diarrhea and recurrent vomiting were observed throughout the previous day after the child had eaten food products of poor quality. What type of salt and water imbalance is likely to have developed in the patient?

- a. Hypoosmolar hyperhydration
- b. Isoosmolar hyperhydration
- c. Hyperosmolar hyperhydration
- d. Isoosmolar dehydration
- e. Hypoosmolar dehydration**

254. Examination of a 7-year-old child detects clinical signs of Down's syndrome. What is the cause of this pathology?

- a. Trisomy 13
- b. Deletion of the short arm of chromosome 21
- c. Trisomy X
- d. Nondisjunction of sex chromosomes
- e. Trisomy 21**

255. Five days after a diarrhea onset, colonoscopy detected gray-green filmy deposits tightly attached to the underlying tissue in the inflamed rectal mucosa of the patient. What disease can be characterized by these pathological changes?

- a. Typhoid fever
- b. Salmonellosis
- c. Crohn's disease
- d. Nonspecific ulcerative colitis
- e. Dysentery**

256. Autopsy of the body of a 52-year-old man, who had a long history of tuberculous prostatitis and died of meningoencephalitis, detected a large number of dense gray nodules 0.5-1 mm in diameter in the pia mater at the basal and lateral surfaces of the brain, spleen, kidneys, and liver. Histologically, these nodules consist of epithelioid, lymphoid, and a small number of giant cells with horseshoe-shaped nuclei located at the periphery of the cell. These changes indicate:

- a. Miliary tuberculosis**
- b. Secondary tuberculosis
- c. Macrofocal disseminated tuberculosis
- d. Septicopyemia
- e. Peracute tuberculous sepsis

257. Some people have a hereditary disease with a complex of symptoms that include hepatic cirrhosis and dystrophic processes in the brain. This disease is accompanied by decreasing plasma

ceruloplasmin levels and disturbed copper metabolism. What disease is it?

- a. Tay-Sachs disease
- b. Marfan syndrome
- c. Gilbert syndrome
- d. Niemann-Pick disease
- e. Wilson disease**

258. Adrenocorticotrophic hormone (ACTH) production is one of the mechanisms of mobilizing the body in response to stressful situations. This hormone regulates the synthesis and secretion of adrenocortical hormones. What hormone induces the secretion of ACTH in the anterior lobe of the pituitary gland?

- a. Somatotrophic hormone
- b. Growth hormone
- c. Thyrotrophic hormone
- d. Corticotropin-releasing hormone**
- e. Epidermal growth factor

259. 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. Transcription
- c. Replication
- d. Translocation
- e. Deletion

260. Stool analysis detected ascaris eggs in the patient's feces. What medicine should be prescribed for this patient's treatment?

- a. Mebendazole**
- b. Furazolidone
- c. Tetracycline
- d. Nystatin
- e. Levomycetin (Chloramphenicol)

261. A patient with heart failure was taking intermediate-acting cardiac glycoside digoxin in tablets for a long time. It resulted in a loss of vision acuity and occasional bouts of nausea. What characteristic of this drug can cause such complications?

- a. Sensitization
- b. Cumulation**
- c. Tolerance
- d. Dependence
- e. Potentiation

262. The sequence of triplets in DNA determines the order of amino acids in the protein molecule. Name this characteristic of the genetic code:

- a. Collinearity**
- b. Universality
- c. Non-overlapping
- d. Triplet nature
- e. Degeneracy

263. During haymaking time, one of the workers developed high body temperature, chills, and runny nose and eyes. He says that it happens to him every year during this season. What type of allergic response is it according to Gell and Coombs?

- a. Type III
- b. Type II
- c. Type IV
- d. Type I**
- e. Type V

264. A patient with diabetes mellitus developed a diabetic coma because of an acid-base imbalance. What type of imbalance occurred in this case?

- a. Respiratory acidosis
- b. Mixed alkalosis
- c. Metabolic alkalosis
- d. Nongaseous alkalosis
- e. Metabolic acidosis**

265. A 28-year-old woman has seropurulent conjunctivitis and complains of painful urination. A conjunctival scrape was obtained for analysis. Microscopy shows inclusions in the cytoplasm of the epithelial cells. Inoculation of the pathologic material onto nutrient media produced no growth. However, inoculation of chicken embryos by the yolk sac route allowed obtaining the culture of the causative agent. What microorganism is the most likely causative agent?

- a. Hemolytic streptococcus
- b. Mycoplasma
- c. Diphtheroid
- d. Chlamydia**
- e. Adenovirus

266. 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. Heart**
- b. Arteriole
- c. Elastic artery
- d. Muscular vein
- e. Muscular artery

267. A man has been working for a long time in oil processing. What type of carcinogens does he encounter at his workplace?

- a. Amines
- b. Polycyclic aromatic hydrocarbons**
- c. Biological carcinogens
- d. Nitrosamines
- e. Amino-azo compounds

268. Examination of a patient in a clinical diagnostic laboratory detected that the activity of the LDH<sub>1</sub> isoenzyme is high in the patient's blood serum. Such clinical and laboratory findings are characteristic of the pathology of the following internal organ:

- a. Pancreas
- b. Heart**
- c. Liver
- d. Skeletal muscles
- e. Kidneys

269. 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. Alterative inflammation
- b. Typical productive inflammation
- c. Tuberculous inflammation**
- d. Leprosy inflammation
- e. Exudative inflammation

270. A 55-year-old man was examined by the endocrinologist because of a disturbance in the pancreatic endocrine function. This disturbance manifests as decreased blood glucagon levels. What cells of this gland do not function properly in this case?

- a. D1 cells



b. PP cells

**c. A cells**

d. D cells

e. B cells

271. As a result of a punctate hemorrhage into the retina of the eye, the patient lost the ability to see objects in the center of the vision field. Where in the retina did the hemorrhage occur in this case?

a. Uvea

b. Punctum caecum

c. Ciliary part of the retina

**d. Macula lutea**

e. Iris part of the retina

272. 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. Duchenne muscular dystrophy

b. Becker muscular dystrophy

**c. Bekhterev disease**

d. Osteochondrosis of the cervical spine

e. Rheumatoid arthritis

273. Due to an uncontrolled intake of a vitamin supplement, a child developed anorexia, nausea, vomiting, diarrhea, hyperthermia, hemorrhages on the skin and mucosa, as well as the signs of meningism. What supplement was the child taking?

a. Nicotinamide

b. Cyanocobalamin

**c. Retinol acetate**

d. Tocopherol acetate

e. Thiamine

274. A person presents with base metabolism that exceeds normal by 8%. It means that the processes of energy metabolism in this person are:

a. Moderately increased

**b. Within normal range**

c. Moderately inhibited

d. Significantly inhibited

e. Significantly increased

275. 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. Typhoid fever

b. Balantidiasis

c. Cholera

**d. Dysentery**

e. Amoebiasis

276. A victim has received a deep incised stab wound to the upper posterior surface of the shoulder. Extension of elbow, hand, and digits is impaired; skin sensitivity of the posterior surface of the shoulder and forearm is lost. What nerve is damaged in this case?

a. N. ulnaris

b. N. musculocutaneus

c. N. cutaneus brachii medialis

d. N. medianus

**e. N. radialis**

277. Because of an injury to the anterior surface of his shoulder, a man cannot flex his arm in the elbow joint. What muscle is likely to be damaged in this case?

- a. M. triceps brachii
- b. M. deltoideus
- c. M. biceps brachii**
- d. M. pectoralis major
- e. M. anconeus

278. Teturam (Disulfiram) that is an aldehyde dehydrogenase inhibitor is widely used in medical practice for alcoholism prevention. What metabolite causes an aversion to alcohol, if its blood levels are high?

- a. Acetaldehyde**
- b. Methanol
- c. Malonaldehyde
- d. Propionaldehyde
- e. Ethanol

279. 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. Branches of the bundle of His
- b. Intraventricular node
- c. Sinoatrial node**
- d. Purkinje fibers
- e. Bundle of His

280. A 45-year-old woman has an attack of cardiac fibrillation. She suffers from stage II essential hypertension. What is the drug of choice for stopping this attack?

- a. Anaprilin (Propranolol)**
- b. Strophanthin
- c. Sustac forte (Nitroglycerin)
- d. Potassium chloride
- e. Lidocaine

281. Patients with alcoholism receive the bulk of their calories with alcoholic drinks. They may develop a characteristic thiamine deficiency (Wernicke-Korsakoff syndrome) that causes nervous system dysfunctions, psychoses, and memory loss. This process is associated with decreased activity of the following enzyme:

- a. Aldolase
- b. Hexokinase
- c. Pyruvate dehydrogenase**
- d. Transaminase
- e. Alcohol dehydrogenase

282. A patient has hyperkalemia and hyponatremia. Such changes can be caused by decreased secretion of a certain hormone. Name this hormone.

- a. Vasopressin
- b. Natriuretic hormone
- c. Cortisol
- d. Aldosterone**
- e. Parathyroid hormone

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

284. A patient has undergone a surgery for installation of a mitral valve prosthesis. Choose the drug

to prevent thrombus formation in this patient.

- a. Paracetamol
- b. Dipyridamole
- c. Acetylsalicylic acid
- d. Urokinase
- e. Warfarin**

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

286. A 66-year-old man has been diagnosed with a malignant epithelial tumor originating from a medium-sized bronchus. What epithelium is the source of the tumor development?

- a. Pseudostratified ciliated epithelium**
- b. Stratified keratinized epithelium
- c. Unstratified prismatic epithelium
- d. Pseudostratified transitional epithelium
- e. Stratified non-keratinized epithelium

287. In a 42-year-old woman, minor skin damage due to domestic trauma has caused activation of vascular-platelet hemostasis that stopped the bleeding within five minutes. What factors is the crucial one at the stage of platelet adhesion during the formation of a platelet thrombus?

- a. Hageman factor
- b. Labile factor (proaccelerin)
- c. Stuart-Prower factor
- d. Von Willebrand factor**
- e. Fletcher factor (prekallikrein)

288. The medicines that inhibit blood clotting (anticoagulants) are used for prevention and treatment of thrombosis. What anticoagulant can be neutralized by protamine sulfate as its antagonist, in case of overdose?

- a. Syncumar (Acenocoumarol)
- b. Heparin**
- c. Sodium hydrocitra
- d. Neodicoumarin (Ethyl biscoumacetate)
- e. Phenylin (Phenindione)

289. A man has stopped breathing as a result of an injury to the back of his head. What could have caused apnea in this case?

- a. A rupture between the mesencephalon and the medulla oblongata
- b. Damage to the medulla oblongata**
- c. A rupture of the spinal cord below the fifth cervical segment
- d. Traumatic shock
- e. Damage to the cerebellum

290. Allergologist examined a patient and diagnosed him with pollinosis. What technique can be used for allergen-specific desensitization?

- a. -
- b. Introduction of physiological saline
- c. Fractional introduction of allergen**
- d. Glucocorticoids
- e. Antihistamines

291. In an experiment, the carotid sinus baroreceptors were stimulated in a test animal. What changes will be observed in the cardiovascular system as a result?

- a. Positive chronotropic effect
- b. Decrease of the sympathetic tone**
- c. Increase of the blood pressure
- d. Increase of the secretion of atrial natriuretic peptides
- e. Increase of the heart rate

292. To reduce joint pain, a woman took simultaneously one tablet of paracetamol and one tablet of diclofenac sodium. What type of drug interaction did the woman use for self-medication?

- a. Additive synergism**
- b. Synergoantagonism
- c. Competitive antagonism
- d. Non-competitive antagonism
- e. Potentiated synergism

293. A 32-year-old man from the rural area came to the doctor with complaints of a painful swelling in the submandibular region with formation of a fistula. Examination showed an infiltration; in the center of this infiltration there was a fistula with thick purulent discharge that contained white granules. The infiltration was lanced, which revealed dense yellow-green tissues with a honeycomb structure due to numerous small abscesses. What disease can be suspected?

- a. Syphilis
- b. Tuberculosis
- c. Actinomycosis**
- d. Abscess in the submandibular region
- e. Leprosy

294. During immediate allergic reactions, degranulation of basophilic granulocytes that secrete bioactive substances occurs. Select from the list one such substance.

- a. Acetylcholine
- b. Thromboxane
- c. Lymphokines
- d. Hageman factor
- e. Serotonin**

295. For preventive immunization against poliomyelitis, inactivated vaccine was introduced parenterally. What immunoglobulins induce postvaccinal immunity in this case?

- a. IgM, IgG**
- b. IgM, secretory IgA
- c. Serum IgA, IgM
- d. IgE, IgM
- e. IgG, secretory IgA

296. A person took a blocker drug, which resulted in an increased heart rate. When this person's eyeballs were pressed, the expected reflex-induced decrease in the heart rate did not occur. What exactly was blocked by this drug in the pacemaker cells?

- a. Muscarinic acetylcholine receptors**
- b.  $\alpha_1$  adrenergic receptors
- c. Fast  $\text{Na}^+$  channels
- d.  $\beta_1$  adrenergic receptors
- e. L-type  $\text{Ca}_2^+$  channels

297. A dental patient complains of a painful burning sensation in his tongue and general weakness. Complete blood count shows that the patient has megaloblastic hyperchromic anemia. What drug should be prescribed in this case?

- a. Nootropil (Piracetam)
- b. Cyanocobalamin**
- c. Paracetamol
- d. Ofloxacin
- e. Biseptol (Co-trimoxazole)

298. 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. Endometrium
- b. Parametrium
- c. -
- d. Perimetrium
- e. Myometrium

299. During an invasive operation the surgeon needs to access the omental bursa of the peritoneal cavity via the omental foramen (foramen of Winslow). What anatomical structure makes up the anterior border of this foramen?

- a. Superior part of duodenum
- b. Greater omentum
- c. Hepatoduodenal ligament
- d. Hepatorenal ligament
- e. Visceral surface of liver

300. A 45-year-old patient after a right shoulder injury caused by a fall cannot abduct his right arm to hold it horizontally. What muscle is damaged in this case, causing this type of movement restriction?

- a. Deltoid muscle
- b. Infraspinatus muscle
- c. Teres major muscle
- d. Brachialis muscle
- e. Biceps brachii

301. 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

302. During the surgical treatment of femoral hernia, the doctor takes note of the external opening of the femoral canal. What anatomical structure forms it?

- a. Septum femorale
- b. Hiatus saphenus
- c. Arcus iliopectineus
- d. Fascia pectinea
- e. Fossa femoralis

303. Histology of the cardiac auricle in a patient with mitral valve stenosis revealed Aschoff-Talalayev granulomas. What genesis of heart disease is in this case evident, according to this histological study?

- a. Septic
- b. Rheumatic
- c. Congenital
- d. Atherosclerotic
- e. Syphilitic

304. 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 P
- b. Vitamin C
- c. Vitamin K
- d. Vitamin E
- e. Vitamin H

305. 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. Platelet separation

b. Cell destruction

c. Increase of the cell surface area

d. Cell division

e. Increase of the number of ion channels

306. A patient has a head injury, accompanied by arterial bleeding in the area of the parietal bone. What branch of the external carotid artery supplies this area with blood?

a. A) temporalis superficialis

b. A) occipitalis

c. A) maxillaris

d. A) facialis

e. A) auricularis posterior

307. To determine toxigenicity of diphtheria causative agents obtained from patients, the cultures were inoculated in a Petri dish with nutrient agar, bilaterally to a strip of filter paper spotted with antidiphtheric antitoxic serum and situated in the center of the Petri dish. After incubation of the inoculated cultures in the agar, strip-like areas of medium turbidity formed between some of the cultures and the filter paper. What immunological test was conducted?

a. Agar gel precipitation test

b. Opsonization test

c. Ring precipitin test

d. Coombs test

e. Agglutination test

308. A woman came to a genetic consultancy, concerned about the risk of giving birth to a son with hemophilia. Her husband has been suffering from this disorder since birth. The woman is healthy and there were no people with hemophilia among her ancestors. Determine the likelihood of a boy with hemophilia being born in this family:

a. Equals 50%

b. Equals 0%

c. Equals 25%

d. Equals 100%

e. Equals 75%

309. The doctor advised the patient who was undergoing doxycycline treatment to avoid dairy products in the diet. Why did the doctor give such a recommendation to the patient?

a. It slows down absorption of the antibiotic

b. Dairy products will not be digested

c. It disturbs the digestive processes

d. It increases the toxicity of the antibiotic

e. It increases the risk of dysbacteriosis

310. Carboxybiotin is a coenzyme form of vitamin H. This vitamin takes part in the following process in the human body:

a. Decarboxylation of amino acids

b. Biosynthesis of higher fatty acids

c. Transamination of acids

d. Tricarboxylic acid cycle

e. Hydroxylation of proline

311. A patient with bronchopulmonary aspergillosis developed allergic rhinitis. Enzyme-linked immunosorbent assay detects elevated levels of IgE. What cell type expresses receptors for IgE on its cell surface, which stimulates the cell to respond to parasites, such as worms?

a. Mast cells

b. T cells

c. B cells

- d. NK cells
- e. Promonocytes

312. A patient developed a purulent inflammatory process in the periodontal tissues. The process was caused by activation of the microorganisms inherent in the body, which are a part of oral mucosal microflora. What type of infection is it?

- a. Superinfection
- b. Reinfection
- c. Autoinfection
- d. Relapse
- e. Exogenous infection

313. Histology of the biopsy material obtained from a mammary gland detects large neoplastic epithelial cells in the epithelium of the ducts, the epidermis of the nipple, and the adjacent skin areas. These cells have a hyperchromic nucleus and pale cytoplasm. They originate from the epithelium of apocrine glands. The cells are isolated and located mostly along basal epidermal cells. What is the most likely diagnosis in this case?

- a. Simple (usual) ductal hyperplasia
- b. Paget's cancer
- c. Adenofibroma
- d. Medullary cancer
- e. Infiltrating lobular cancer

314. Increased hyaluronidase activity was detected in the patient's blood serum. What biochemical value should be measured in the blood serum to confirm the provisional diagnosis of a connective tissue pathology?

- a. Sialic acid
- b. Galactose
- c. Bilirubin
- d. Uric acid
- e. Glucose

315. Laboratory tests of a 54-year-old man show that his inulin clearance is 120 mL/min., which means that the following process occurs normally in this man:

- a. Renal blood flow
- b. Tubular reabsorption
- c. Renal plasma flow
- d. Tubular secretion
- e. Glomerular filtration rate

316. ECG of the patient shows increased duration of the QRS complex. What is the most likely cause?

- a. Increased period of ventricular excitation
- b. Increased atrial and ventricular excitability
- c. Increased atrial excitability
- d. Disturbed conduction in the atrioventricular node
- e. Increased period of atrial excitation

317. A patient with neurologic disorders was diagnosed with a brain tumor. The tumor was removed surgically. It looks like a dense node attached to the dura mater. Histologically this tumor consists of tightly packed endothelium-like cells. Make the diagnosis:

- a. Astrocytoma
- b. Neuroblastoma
- c. Glioblastoma
- d. Meningioma
- e. Meningeal sarcoma

318. A woman was diagnosed with peptic ulcer of the stomach. She has a long history of rheumatoid arthritis. The peptic ulcer in this case is most likely to be caused by a long-term taking of the:

- a. H<sub>2</sub>-antagonists

- b. Antihypertensive agents
- c. Antihistamines
- d. Antibiotics

**e. Glucocorticoids**

319. In a poorly ventilated and overcrowded room an elderly man has developed increased blood pressure. What is the mechanism of this reaction?

- a. Pressor reflex from volume receptors
- b. Pressor reflex from osmoreceptors
- c. Depressor reflex from osmoreceptors
- d. Depressor reflex from chemoreceptors

**e. Pressor reflex from chemoreceptors**

320. A young person has excessive levels of somatotrophic hormone and enlarged nose, lips, ears, lower jaw, hands and feet. What is the most likely diagnosis in this case?

- a. Adiposogenital dystrophy
- b. Cushing disease
- c. Pituitary dwarfism

**d. Acromegaly**

e. Addison disease

321. A cell with vitamin E deficiency was exposed to ionizing radiation. It resulted in intensified release of hydrolytic enzymes into the cytoplasm and a complete destruction of intracellular structures - autolysis. What organelles caused this phenomenon?

a. Microbodies

**b. Lysosomes**

- c. Endoplasmic reticulum
- d. Mitochondria
- e. Golgi apparatus

322. A 30-year-old man hospitalized with the diagnosis of acute glomerulonephritis has proteinuria. What disorder has caused this phenomenon?

- a. Decreased number of functioning nephrons
- b. Increased permeability of the glomerular membrane**
- c. Decreased oncotic blood pressure
- d. Increased hydrostatic pressure on the capillary wall
- e. Delayed excretion of products of nitrogenous metabolism

323. Blood samples of a patient with typhoid fever have been sent to a laboratory to be tested for antibodies. What serological reaction should be used for this purpose?

**a. Agglutination reaction**

- b. Precipitation reaction
- c. Hemagglutination inhibition reaction
- d. Hemagglutination reaction
- e. Complement fixation reaction

324. Autopsy of the body of a 59-year-old woman, who had a long history of essential hypertension, shows that both her kidneys are dense and significantly reduced in size and have a fine-grained surface. What is indicated by these changes?

a. Hypoplasia

**b. Atrophy caused by insufficient blood supply**

- c. Senile atrophy
- d. Dysfunctional atrophy
- e. Atrophy caused by pressure

325. A newborn with asphyxia was administered a drug for direct stimulation of the respiratory center. This drug has an anti-inflammatory, anti-allergic, and broncholytic effects. It also inhibits the cerebral cortex and does not cause seizures. What drug has such characteristics?

a. Camphor



**b. Aethimizolum**

- c. Lobeline
- d. Nikethamide
- e. Bemegride

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

- a. Pyridoxine hydrochloride
- b. Cyanocobalamin
- c. Nicotinic acid
- d. Ascorbic acid

**e. Retinol acetate**

327. A 25-year-old patient against the background of acute pneumonia with fever of  $40.1^{\circ}\text{C}$  presents with leukocytosis of  $14.9 \text{ g/L}$  with a marked left shift in the leukogram. What factor directly increases both proliferation and differentiation of leukocytes in the bone marrow?

- a. Tumor necrosis factor
- b. Interleukin-10
- c. Interleukin-1
- d. Colony-stimulating factor**
- e. Prostacyclin

328. A woman gave birth to a child with toxoplasmosis. She believes she has contracted toxoplasmosis from a friend who also recently gave birth to a sick child. What route of toxoplasmosis transmission to a human is impossible?

- a. Contact with a sick person**
- b. Contact with a cat
- c. Drinking water contaminated with oocytes
- d. Eating unwashed vegetables
- e. Eating semi-raw meat of an infected animal

329. A patient died of chronic renal failure. The patient's pericardial leaflets are dull-colored and have gray and thin filamentous coating. What pathological process occurred in the pericardium?

- a. Fibrinous inflammation**
- b. Purulent inflammation
- c. Proliferative inflammation
- d. Serous inflammation
- e. Catarrhal inflammation

330. A patient needs emergency botulism prophylaxis. What should be used for this purpose?

- a. Anatoxin
- b. Polyvalent antitoxic serum**
- c. Interferon
- d. Placental  $\gamma$  globulin
- e. Monovalent antitoxic serum

331. After a long course of treatment of sluggish schizophrenia, a man developed signs of parkinsonism. Which of the following drugs could have caused this complication?

- a. Sibazon (Diazepam)
- b. Piracetam
- c. Lithium carbonate
- d. Haloperidol
- e. Aminazine (Chlorpromazine)**

332. Normally, the maternal and fetal blood circulation have no direct connection. The fetal blood flows through the vessels in the chorionic villi, while maternal blood circulates through the intervillous space of the endometrium. What separates fetal and maternal blood?

- a. Rohr amorphous fibrinoid
- b. Fibrinoid oxyphilic mass (Langhans fibrinoid)

- c. Closing plate of the decidua basalis
- d. Connective tissue septa

**e. Hemochorial barrier**

333. 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. Measles
- b. Influenza

**c. Meningococemia**

- d. Scarlet fever
- e. Typhus

334. When pressure in the aorta sharply increases, the force and rate of cardiac contractions decrease. What nerve contains sensitive fibers from baroreceptors of the aortic arch?

- a. Inferior cervical cardiac nerve (Pavlov's nerve)
- b. Recurrent laryngeal nerve
- c. Glossopharyngeal nerve

**d. Vagus nerve**

- e. Carotid sinus nerve (Hering's nerve)

335. 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. Vitamin B<sub>6</sub> synthesis will decrease
- c. Prostaglandin synthesis will increase
- d. Urokinase synthesis will increase
- e. Calcium filtration in the glomeruli will decrease

336. Autopsy of the body of a person, who died of renal failure and had been suffering from bronchiectasis for the past 5 years, revealed dense enlarged kidneys with a thickened white cortical layer and a greasy sheen. What disease was detected in the kidneys?

- a. Necrotic nephrosis
- b. Chronic pyelonephritis

**c. Secondary amyloidosis**

- d. Glomerulonephritis
- e. Nephroblastoma

337. Vitamin A deficiency causes impaired twilight vision. What cells have this receptor function?

- a. Ganglionic neurons
- b. Bipolar neurons
- c. Retinal horizontal cells
- d. Neurosensory cone cells

**e. Neurosensory rod cells**

338. Name the drug, that has a detrimental effect on erythrocytic forms of malarial plasmodiae and *Entamoeba histolytica* and is used for treatment and prevention of malaria, as well as for treatment of amebiasis and collagen diseases.

- a. Emetine hydrochloride
- b. Erythromycin
- c. Tetracycline
- d. Quinine

**e. Chingamin (Chloroquine)**

339. Detailed examination of the karyotype of a person with Down syndrome detects two populations of somatic cells - normal cells and cells with trisomy 21. Name this genetic phenomenon:

- a. Modification

**b. Mosaicism**

- c. Genocopy
- d. Phenocopy
- e. Polyploidy

340. A 30-year-old man complains of weakness, thirst, headache, and lumbar pain. One month ago, he had a case of bacterial tonsillitis. He has facial edemas. Pulse - 84/min., blood pressure - 175/100 mm Hg. General urinalysis: erythrocytes - 40-52 in sight, leukocytes - 1--2 in sight, protein - 4 g/L. The patient was diagnosed with acute diffuse glomerulonephritis. What is the main mechanism of kidney damage in this patient?

**a. Immune-mediated damage to the glomeruli**

- b. Impaired hemodynamics in the kidneys
- c. Impaired urodynamics
- d. Direct damage to the glomeruli, caused by microorganisms
- e. Tubular damage

341. As a result of an abdominal trauma, one of the muscles that form the superior wall of the inguinal canal was damaged. Name this muscle:

**a. M. obliquus internus abdominis**

- b. M. pyramidalis
- c. M. quadratus abdominis
- d. M. rectus abdominis
- e. M. obliquus externus abdominis

342. A patient was hospitalized into the surgical department with signs of acute appendicitis. The following changes are observed in the patient's leukogram: total leukocyte count -  $16 \cdot 10^9/L$ , basophils - 0%, eosinophils - 2%, myelocytes - 0%, band neutrophils - 8%, segmental neutrophils - 59%, lymphocytes - 25%, monocytes - 4%. How can such changes be characterized?

- a. Neutrophilia with hyperregenerative left shift
- b. Neutrophilia with right shift
- c. Neutrophilia with regenerative left shift**
- d. Neutrophilia with degenerative left shift
- e. Neutrophilic leukemoid reaction

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

- a. Colon sigmoideum
- b. Colon transversum
- c. Caecum
- d. Colon descendens

**e. Rectum**

344. A woman giving birth has an increased pain threshold due to activation of the following system:

- a. Sympathoadrenal and pituitary-adrenal
- b. Pituitary-adrenal and antinociceptive
- c. Sympathoadrenal and antinociceptive
- d. Sympathoadrenal

**e. Antinociceptive**

345. A patient was hospitalized with the provisional diagnosis of typhoid fever. The disease onset was three days ago. The temperature is  $39^{\circ}C$ . What method of laboratory diagnostics must be used to confirm this diagnosis?

- a. Serology
- b. Obtaining a biliculture
- c. Obtaining a blood culture**
- d. Obtaining a urinoculture
- e. Obtaining a coproculture

346. A patient with chronic heart failure developed hepatic cirrhosis with ascites and edema of the

lower limbs. What changes in the blood composition cause ascites in this patient?

- a. Hypoprothrombinemia
- b. Macroglobulinemia
- c. Hypoalbuminemia**
- d. Hypocholesterolemia
- e. Hypergammaglobulinemia

347. On the third week of embryogenesis, the central part of the epiblast (ectoderm) cells bends up and the process of neurulation begins. The rest of the cells of the ectoderm differentiate into:

- a. Intestine
- b. Somites
- c. Notochord
- d. Yolk sac
- e. Skin**

348. One year after the resection of 2/3 of the stomach, the patient developed complaints of skin pallor, headaches, dizziness, and general weakness. Complete blood count: hemoglobin - 60 g/L, erythrocytes -  $2.4 \cdot 10^{12}/L$ . What is the cause of this pathological condition?

- a. Increased secretion of Castle's intrinsic factor
- b. Increased folic acid levels
- c. Decreased folic acid levels
- d. Decreased copper absorption
- e. Decreased secretion of Castle's intrinsic factor**

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

350. Autopsy of the body of a 29-year-old man, who had been suffering from peptic ulcer disease of the duodenum for a long time, reveals signs of peritonitis and multiple steatonecroses in the extraperitoneal fatty tissue and pancreas. An ulcer-like defect 5 mm in diameter and 10 mm deep was detected in the area of the body of the pancreas. The edges of the defect contain necrotic masses. What complication of peptic ulcer disease of the duodenum is observed in this case?

- a. Malignization
- b. Stenosis
- c. Hemorrhage
- d. Duodenitis
- e. Penetration**

351. 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. Hypersecretion of glucocorticoids
- b. Hypersecretion of catecholamines
- c. Hyposecretion of glucocorticoids
- d. Hypoaldosteronism
- e. Hyperaldosteronism**

352. Ultrasound of a pregnant woman shows normal functioning of the fetal cardiovascular system and ductus arteriosus. What vessels are connected by the ductus arteriosus?

- a. Pulmonary trunk and superior vena cava

- b. Umbilical vein and aorta
- c. Umbilical vein and umbilical artery
- d. Pulmonary trunk and inferior vena cava

**e. Pulmonary trunk and aorta**

353. After bacteria enters the body, the first stage of immune response formation occurs. What is the role of macrophages in this process?

**a. Processing and presentation of antigen to T helpers**

- b. Processing and presentation of antigen to T killers
- c. Production of immunoglobulins
- d. Activation of T killers
- e. Activation of NK cells

354. On examination a woman presents with a swelling, distended veins, and node formation on the medial surface of her thigh. It is a pathology of the following vein:

**a. V. saphena magna**

- b. V. saphena parva
- c. V. iliaca externa
- d. V. poplitea
- e. V. femoralis

355. 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. Mixed
- b. Contact
- c. Transplacental

**d. Alimentary**

e. Aerogenic

356. 14 days after the recovery from tonsillitis, a 15-year-old teenager developed face edema in the morning, high blood pressure, and urine resembling "meat slops". Immunohistochemistry of renal biopsy material revealed immune complex deposits on the capillary basement membrane and in the glomerular mesangium. What disease is it?

- a. Acute interstitial nephritis
- b. Necrotic nephrosis

**c. Acute glomerulonephritis**

- d. Lipoid nephrosis
- e. Acute pyelonephritis

357. A 12-year-old child, who was being treated for influenza in the infectious diseases department of a hospital, developed a severe headache, nausea, dizziness, and meningeal signs 5 days after the onset of the illness. The death occurred in 24 hours after the development of progressing brain edema. Autopsy of the skull cavity shows edematous and plethoric pia mater, diffusely soaked with a bright red fluid; the gyri and sulci are smoothed out. What complication of influenza can be suspected in this case?

- a. Venous hyperemia of the meninges
- b. Intracerebral hemorrhage
- c. Serous meningitis

**d. Hemorrhagic meningitis**

e. Purulent leptomeningitis

358. A 60-year-old woman has congestive heart failure with increased cardiac preload. What bioactive substance will be secreted by the heart in this case?

a. Angiotensin II

**b. Atrial natriuretic peptide**

c. Aldosterone

- d. Vasopressin
- e. Gastric inhibitory peptide

359. After a long-term antibiotic therapy, a patient developed whitish spots on the oral mucosa. Gram-positive oval budding cells were detected in the prepared smears. Name these pathogens.

- a. Sarcina
- b. Actinomyces
- c. Candida fungi**
- d. Tetracocci
- e. Staphylococci

360. Biopsy of the endometrium of a healthy woman, performed during the secretory phase of the menstrual cycle, detected polygonal cells rich in lipids and glycogen in the mucosal lamina propria. Name these cells.

- a. Fibroblasts
- b. Decidual cells**
- c. Smooth muscle cells
- d. Myofibroblasts
- e. Endothelial cells of damaged vessels

361. During a surgery on the thyroid gland due to Basedow disease (toxic diffuse goiter), the patient's parathyroid glands were mistakenly removed. The patient developed seizures and tetany. Metabolism of which bioelement was disturbed?

- a. Potassium
- b. Sodium
- c. Magnesium
- d. Calcium**
- e. Iron

362. The molecules of mature mRNA are the carriers of genetic information about the sequence, in which certain amino acids must attach to each other. What is coded in the mRNA molecules?

- a. Secondary structure of carbohydrates
- b. Primary structure of lipids
- c. Primary structure of a protein**
- d. Primary structure of carbohydrates
- e. Primary structure of polynucleotides

363. Increased levels of direct bilirubin and bile acids were detected in the blood of a patient with jaundice. There is no stercobilinogen in the patient's urine. In what type of jaundice can these signs be observed?

- a. Mechanical**
- b. Hemolytic
- c. Hepatic
- d. Parenchymatous
- e. Suprahepatic

364. What must be added to donor blood preserved with sodium citrate to provoke its clotting?

- a. Fibrinogen
- b. Prothrombin
- c. Vitamin K
- d. Sodium ions
- e. Calcium ions**

365. Genealogical analysis of a child with myotonic dystrophy determined that this disease manifests in every generation, is in equal measure present in the relatives of both genders, the risk of inheriting this disease is equal no matter which parent is affected. If one of the parents is heterozygous for this disease and the other parent is healthy, the risk of them giving birth to a sick child is 50%. What type of disease inheritance is it?

- a. X-linked dominant

- b. X-linked recessive
- c. Autosomal recessive
- d. Y-linked

e. Autosomal dominant

366. After bladder catheterization, a large number of fresh erythrocytes appeared in the patient's general urinalysis. This phenomenon 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. Membranous

- b. Spongy
- c. Proximal
- d. Prostatic
- e. Distal

367. A patient has been diagnosed with hydrocele testis (an increase in the amount of fluid in a serous cavity). Between what testicular tunics can the pathological content be located in this case?

- a. Between the internal spermatic fascia and tunica vaginalis of the testicle
- b. Between the skin and cremaster muscle

c. Between the parietal and visceral laminae of the tunica vaginalis of the testicle

- d. Between the skin and tunica dartos
- e. Between the tunica dartos and internal spermatic fascia

368. Ingestion of plants and mushrooms that grow along highways is dangerous due to risk of lead poisoning. What is the main source of environmental pollution with this chemical element?

- a. Herbicides
- b. Chemical fertilizers
- c. Sewage

d. Exhaust fumes

- e. Acid rains

369. 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. Phenylephrine (Mesaton)
- b. Succinylcholine (Dithylin)

c. Neostigmine (Proserin)

- d. Heparin
- e. Insulin

370. The mother of a 2-year-old boy brought him to a hospital complaining of enlargement of her child's scrotum. After examination, the child was diagnosed with hydrocele testis (fluid accumulation between the testicular membranes). What tunic of the testicle contains this fluid?

- a. Internal spermatic fascia
- b. Tunica dartos
- c. External spermatic fascia
- d. Tunica albuginea

e. Tunica vaginalis

371. Absence or insufficient production of lipotropic factors in the human body causes development of fatty degeneration in the liver. What substance can be classified as lipotropic?

- a. Cholesterol
- b. Triacylglycerides

c. Choline

- d. Fatty acids
- e. Riboflavin

372. 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. Loperamide

b. Omnopon (Papaveretum)

c. Rehydron

d. Furazolidone

e. Linex

373. A couple gave birth to a son with hemophilia. The parents themselves are healthy, but the maternal grandfather has hemophilia. Determine the type of inheritance of this trait:

a. Autosomal recessive

b. Sex-linked dominant

c. Autosomal dominant

d. Sex-linked recessive

e. Y-linked

374. A man with a disorder of cerebral circulation has problems with swallowing liquid foods. What part of his brain is damaged?

a. Cervical spinal cord

b. Diencephalon

c. Mesencephalon

d. Cerebellum

e. Medulla oblongata

375. During a surgery on the thoracic spine, the surgeon severed the ligaments that connect the vertebral arches. What ligaments were severed by the surgeon?

a. Lig. longitudinale posterius

b. Ligg. interspinalia

c. Ligg. flava

d. Ligg. intertransversaria

e. Lig. supraspinale

376. Trypsinogen is synthesized in the pancreas. It is converted into trypsin due to the action of intestinal enterokinase. How does this process work?

a. Methylation

b. Acetylation

c. Limited proteolysis

d. Hydroxylation

e. Phosphorylation

377. For infectious disease prevention, a person preparing to travel to Africa was prescribed chingamin (chloroquine). This drug belongs to the following pharmacological group:

a. Antimalarial

b. Anthelmintic

c. Antituberculosis

d. Antisyphilitic

e. Antimycotic

378. A 25-year-old woman complains of a rash on her torso. The doctor suspects secondary syphilis. What diagnostic method should be used to confirm this diagnosis?

a. Virological

b. Biological

c. Serological

d. Bacteriological

e. Allergy testing

379. Problems with the processes of lipid breakdown in small intestine are caused by disturbed lipase activity. What factor activates lipase?

a.  $\text{Na}^+$  salts

b. Hydrochloric acid



c. Bile acids

d. Enterokinase

e. Pepsin

380. Long-term taking of medicines can affect cells of the liver. Particularly, it can cause marked hypertrophy of agranular endoplasmic reticulum due to the following function of this organelle:

a. Formation of maturation spindle

b. Nucleic acid synthesis

c. Intracellular digestion

d. Detoxication of harmful substances

e. Protein synthesis

381. Sigmoidoscopy of a 10-year-old child shows the rectal and sigmoid mucosa to be swollen, reddish, and covered in a thick layer of mucus. These changes correspond with the following pathology:

a. Catarrhal inflammation

b. Purulent inflammation

c. Bruise

d. Venous plethora

e. Hemorrhagic inflammation

382. KCl concentration in a solution that surrounds an isolated cell was increased. How will resting membrane potential (RMP) and cell excitability change in this case?

a. RMP increases, excitability decreases

b. RMP decreases, excitability increases

c. RMP and excitability remain unchanged

d. RMP increases, excitability increases

e. RMP decreases, excitability remains unchanged

383. A journalist for a long time was stationed in India. After his return from this country he developed a string-like torus on the right leg in subcutaneous tissues of the popliteal area. At the end of this torus a vesicle filled with necrotic masses was formed. What type of helminthiasis can be suspected?

a. Trichinosis

b. Opisthorchiasis

c. Enterobiasis

d. Ascariasis

e. Dracunculiasis

384. In an experiment, the threshold stimulation force for the cells of various tissues was studied. Where was it the smallest?

a. Motor neurons of the spinal cord

b. Cardiomyocytes

c. Glandular cells

d. Skeletal muscle cells

e. Smooth muscle cells

385. During a surgery, the patient received a blood transfusion. In such cases, the donor blood must be tested for antigens of the following causative agent:

a. Hepatitis B virus

b. Hepatitis E virus

c. Adenoviruses

d. Enteroviruses

e. Hepatitis A virus

386. A 21-year-old patient complains of weakness and elevated temperature up to  $38-40^{\circ}\text{C}$ . Objectively the liver and spleen are enlarged. In blood: Hb- 100 g/L, erythrocytes -  $2.9 \cdot 10^{12}/\text{L}$ , leukocytes -  $4.4 \cdot 10^9/\text{L}$ , platelets -  $48 \cdot 10^9/\text{L}$ , segmented neutrophils - 17%, lymphocytes - 15%, blast cells - 68%. All cytochemical reactions of blast cells are negative. What hematologic conclusion can be made?

- a. Acute myeloblastic leukemia
- b. Chronic myeloid leukemia
- c. Acute erythromyelosis
- d. Undifferentiated leukemia**
- e. Acute lymphoblastic leukemia

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

388. The dangerous moments in the pathogenesis of myocardial necrosis is the further expansion of the zones of necrosis, dystrophy, and ischemia. An important role in this process belongs to the increased oxygen consumption by the myocardium. What substances contribute to this process?

- a. Catecholamines**
- b. Adenosine
- c. Acetylcholine
- d. Chlorine ions
- e. Cholesterol

389. What enzyme due to its bactericidal effect prevents inflammation of the oral mucosa, if it becomes damaged?

- a. Lysozyme**
- b. Nuclease
- c. Lingual lipase
- d. Amylase
- e. Mucin

390. From the feces of a patient with acute gastroenteritis a pure culture of microorganisms was obtained. The microorganisms are small mobile slightly curved gram-negative bacilli that within 6 hours grow into a light blue film on the 1% alkaline peptone water. Such properties are characteristic of the following microorganisms:

- a. Bacilli
- b. Clostridia
- c. Vibrios**
- d. Spirochaetes
- e. Spirilli

391. 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. Echinococcus
- b. Cyst**
- c. Abscess
- d. -
- e. Tuberculosis

392. A man presents with atrophy of the posterior group of calf muscles. What nerve is affected in this case?

- a. Femoral nerve
- b. Sural nerve
- c. Superficial peroneal nerve
- d. Tibial nerve**

e. Deep peroneal nerve

393. Examination of a man with signs of hypertension shows that the optimal medicine for him would be a drug that manages the blood pressure through the renin-angiotensin system. Name this drug:

a. Lisinopril

b. Apressin (Hydralazine)

c. Octadine (Guanethidine)

d. Anaprilin (Propranolol)

e. Dibazol (Bendazol)

394. After a prolonged attack of severe headache the patient lost mobility in his left arm and leg. Muscle tone is decreased in the affected limbs, the muscles are spasmed, spinal tendon reflexes are acutely intensified, reflex zones are increased. What nervous system disorder can be observed in this patient?

a. Central paralysis

b. Flaccid paralysis

c. Reflex paralysis

d. Extrapyramidal paralysis

e. Peripheral paralysis

395. Famotidine was prescribed to a patient for the treatment of peptic ulcer disease of the stomach. What is the mechanism of action of this drug?

a. Effect on ion channels in cell membranes

b. Effect on transport systems in cell membranes

c. Proton pump blockade

d. Anti-enzymatic action

e. Blockade of H<sub>2</sub>-histamine receptors

396. After the treatment with an antitubercular agent, a 40-year-old woman developed optic neuritis, memory impairment, and seizures. What medicine was she taking?

a. Isoniazid

b. Thioacetazone

c. Rifampicin

d. Kanamycin

e. Para-aminosalicylic acid

397. 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. Tunica dartos

b. Parietal layer of the tunica vaginalis of the testicle

c. Cremaster muscle

d. External spermatic fascia

e. Internal spermatic fascia

398. A certain drug was prescribed as a part of complex therapy of peptic ulcer disease of the stomach. This drug is a competitive antagonist of histamine receptors. Its effect on H<sub>2</sub>-receptors of parietal cells reduces induction of hydrochloric acid. Name this drug.

a. Famotidine

b. Omeprazole

c. Pirenzepine

d. Misoprostol

e. Sucralfate

399. A patient has been diagnosed with chronic gastritis. Intragastric pH-metry detects decreased acidity of the gastric juice. What cells have a reduced function in this case?

a. -

b. Enteroendocrine cells

c. Mucocytes

d. Gastric parietal cells

e. Gastric chief cells

400. A patient with chronic hypoacid gastritis has symptoms of hypochromic anemia. Microscopy of a blood smear detected annulocytes (leptocytes), microanisocytosis, and poikilocytosis. What type of anemia is observed in the patient?

a. Thalassemia

b. Sickle cell disease

c. Iron deficiency anemia

d. Pernicious anemia

e. Acute posthemorrhagic anemia

401. 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. Biermer's anemia

c. Polyneuritis (Beriberi)

d. Rickets

e. Pellagra

402. A patient has been hospitalized into the infectious diseases department with signs of fever that occurred again for a second time with the interval of two days between the two episodes. Blue-violet twisted cells were detected in the blood drop stained according to the Romanowsky-Giemza technique. What microorganism has caused the disease in this patient?

a. Plasmodium vivax

b. Rickettsia typhi

c. Borrelia recurrentis

d. Leptospira interrogans

e. Treponema pallidum

403. Lipoic acid was removed from the diet of test animals, which resulted in inhibition of pyruvate dehydrogenase complex in these animals. What is the function of lipoic acid in relation to this enzyme?

a. Product

b. Inhibitor

c. Cofactor

d. Substrate

e. Allosteric regulator

404. 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. Postinflammatory pneumosclerosis

b. Dust-induced pneumosclerosis

c. Bronchial asthma

d. Chronic bullous emphysema

e. Multiple bronchiectasis

405. 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 rRNA

c. Gene amplification

d. Nucleotide composition analysis of mRNA

e. Nucleotide composition analysis of tRNA

406. 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. Brachial plexus

b. Spinal cord

c. Intercostal nerves

d. Nerve roots

e. Cervical plexus

407. What changes can be expected to occur in the isolated heart of a toad, if excessive amount of calcium chloride is introduced into its perfusate?

a. Increased cardiac contraction force and frequency

b. Diastolic cardiac arrest

c. Decreased cardiac contraction force

d. Increased cardiac contraction frequency

e. Increased cardiac contraction force

408. A patient suffers from peptic ulcer disease with ulcer localization in the duodenum. He complains of heartburn, nausea, and periodic vomiting. What H2-blocker should be prescribed in this case?

a. Atropine sulfate

b. Diphenhydramine

c. Perphenazine

d. Famotidine

e. Isovaleric acid

409. Autopsy of the body of a man who died of croupous pneumonia revealed an opaque liquid in the pleural cavity and a grayish film on the visceral pleura. What type of inflammation is observed on the visceral pleura?

a. Catarrhal

b. Purulent

c. Fibrinous

d. Hemorrhagic

e. Granulomatous

410. A woman with a pregnancy pathology needs medical anesthesia for childbirth. What medication can be prescribed in this case?

a. Morphine

b. Trimeperidine

c. Metamizole sodium

d. -

e. Fentanyl

411. A 35-year-old man has been hospitalized with complaints of a runny nose and headache that last for 5 days already. After examination, he was diagnosed with maxillary sinusitis (inflammation of the maxillary sinus). Through what nasal passage did the infection reach this sinus?

a. Superior nasal meatus

b. Inferior nasal meatus

c. Nasopharyngeal meatus

d. Common nasal meatus

e. Middle nasal meatus

412. A 25-year-old woman was hospitalized into the gynecological unit. She needs a surgery for removal of an ovarian tumor. During the surgery it is necessary to cut the ligament that connects the ovary to the uterus. Name this ligament:

a. Lig. suspensorium ovarii

b. Lig. cardinale

c. Lig. latum uteri

d. Lig. ovarii proprium

e. Lig. umbilicale laterale

413. A 37-year-old man, who has been smoking for 19 years, complains of a constant cough. Bronchial biopsy revealed signs of chronic inflammation, thickening of the mucosa, and transformation of unstratified ciliated epithelium into stratified squamous epithelium. What pathological process is observed in the patient?

a. Epithelial hypertrophy

b. Epithelial hyperplasia

**c. Metaplasia**

d. Dysplasia

e. Leukoplakia

414. A patient used an indirect-acting adrenergic agonist to treat rhinitis. After the patient has been using the drops for several days, the vasoconstrictive effect of the drug gradually diminished. Name this phenomenon:

a. Allergy

b. Cumulation

c. Idiosyncrasy

d. Teratogenicity

**e. Tachyphylaxis**

415. A child has 3 copies of chromosome 18, which resulted in characteristic cranial elongation from front to back, maldevelopments of the musculoskeletal system, fused fingers, and maldevelopments of skeletal muscles. What hereditary pathology is observed in this child?

a. Patau syndrome

b. Down syndrome

**c. Edwards syndrome**

d. Klinefelter syndrome

e. Turner syndrome

416. When performing a surgery on the knee joint, the doctor must keep in mind the artery that gives the largest number of branches for the formation of the arterial network around the knee joint. What artery is it?

**a. A) poplitea**

b. A) fibularis

c. A) tibialis anterior

d. A) tibialis posterior

e. A) femoralis

417. The Gerontology Institute recommends older people to take vitamin complexes that contain vitamin E) What is the main function of this vitamin?

a. Antineuritic

b. Antidermatitic

**c. Antioxidant**

d. Antiscorbutic

e. Antihemorrhagic

418. After a trauma the patient cannot extend his arm in the elbow joint. This condition is likely to be caused by functional disturbance of the following muscle:

a. M. coraco-brachialis

**b. M. triceps brachii**

c. M. biceps brachii

d. M. subscapularis

e. M. brachialis

419. A man was admitted to the trauma department with an injury on the anterior surface of his left thigh in its lower third. Examination shows a wound 1.5x3 cm in size, located transversely to the thigh, 2 cm above the patella. In the wound, the damaged tendon is well defined. Leg extension is limited in the patient. What muscle is most likely to be functionally impaired?

- a. M. extensor digitorum longus
- b. M. tibialis anterior
- c. M. quadriceps femoris**
- d. M. peroneus longus
- e. M. triceps surae

420. After a stroke that occurred one week ago, a 64-year-old woman has lost the mobility of her left arm and leg. The affected limbs have pathological reflexes and increased muscle tone and reflex responses. What type of paralysis is it?

- a. Tetraplegia
- b. Diplegia
- c. Paraplegia
- d. Hemiplegia**
- e. Monoplegia

421. This screening method is the first stage of diagnosing diseases caused by metabolic disorders, after which more accurate methods of studying enzymes and amino acids are used. Name the described method.

- a. Population statistics
- b. Cytogenetic method
- c. Immunological method
- d. Biochemical method**
- e. Somatic cell hybridization

422. A patient was prescribed a synthetic antiprotozoal agent that is an imidazole derivative for the treatment of giardiasis (lambliaosis). Before making the prescription, the doctor warned the patient that alcoholic beverages were strictly forbidden during the treatment. What drug was prescribed in this case?

- a. Tetracycline
- b. Metronidazole**
- c. Methacycline
- d. Chingamine (Chloroquine)
- e. Furazolidone

423. In the course of an urgent surgery, the vermiform appendix of the patient was excised. The appendix was acutely distended and gray-black throughout its whole length. In the distal segment a defect of the appendix wall was detected, through which a foul-smelling gray-brown substance was being discharged from the appendix lumen. Histological analysis shows necrotization of the appendix wall with hemorrhagic foci; lumen of the mesenteric artery is filled with a thrombus. What type of appendicitis is it?

- a. Acute phlegmonous
- b. Acute simple
- c. Chronic
- d. Acute gangrenous**
- e. Acute superficial

424. 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. Kidneys
- b. Brain
- c. Intestine**
- d. Heart
- e. Adrenal glands

425. A man was diagnosed with spongy encephalopathy. A postmortem examination of his brain was performed. Histological microslide of his brain contains protein particles without nucleic acids. What pathogen caused the infectious disease in this man?

- a. Defective phage

- b. Transposon
- c. Viroid
- d. Episome
- e. Prion**

426. 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. Decrease in duration
- c. Increase in duration
- d. Disappear**
- e. Remain unchanged

427. Histology of a lymph node revealed numerous enlarged lymphoid follicles with croupous proliferation centers that have a large number of mitotic figures. What is indicated by these changes?

- a. Lymphosarcoma
- b. Antigen stimulation with follicular hyperplasia**
- c. Lymphocytic leukemia
- d. Atrophy of lymphoid tissue
- e. Lymphogranulomatosis

428. 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. Nephroblastoma
- b. Renal cyst
- c. Hydronephrosis**
- d. Hydroureteronephrosis
- e. Pyelectasis

429. 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 tyrosinase
- b. Inhibition of homogentisic acid oxidase
- c. Inhibition of phenylalanine hydroxylase
- d. Activation of tyrosinase**
- e. Activation of homogentisic acid oxidase

430. A 55-year-old patient complains of pain in the joints that becomes worse before changes in the weather. Blood tests detect high levels of uric acid. What substance is breaking down, likely causing this condition in the patient?

- a. Adenosine monophosphate**
- b. Thymidine monophosphate
- c. Cytidine monophosphate
- d. Uridine monophosphate
- e. -

431. Antibiotic treatment of a 6-year-old child resulted in hepatitis, photodermatitis, and disturbed development of the child's teeth and bones. What group of antibiotics has such side effects?

- a. Cephalosporins
- b. Polyenes
- c. Tetracyclines**
- d. Aminoglycosides
- e. Macrolides

432. Thymus is not only the organ that produces a specific humoral factor thymosin that causes the differentiation of red bone marrow cells in human body, but also a place, where certain cells undergo maturation. Name these cells.



- a. Basophils
- b. Macrophages
- c. T lymphocytes
- d. Erythrocytes
- e. B lymphocytes

433. A 27-year-old woman has undergone a sector resection of mammary gland tissue. Macroscopy detects a dense white node, 4 cm in diameter, with clear margins in the excised tissue. Immediate histological analysis shows the tumor to consist of a large amount of fibrous stroma with stromal proliferation around the small canaliculi. Canalicular epithelium overlays the basement membrane and retains its polarity. Make the diagnosis:

- a. Sarcoma
- b. Adenocarcinoma
- c. Cancer
- d. Dyshormonal disorders
- e. Pericanalicular fibroadenoma

434. In an experiment, the blood flow rate (mL/min) was measured in different organs. What organ has the highest blood flow rate per 100 g of its mass?

- a. Liver
- b. Kidneys
- c. Thyroid gland
- d. Brain
- e. Stomach

435. A biopsy material obtained from the mucosa of a patient with bronchial asthma contains a significant number of cells with numerous metachromatic granules. Name these cells.

- a. Tissue basophils
- b. Reticulocytes
- c. Macrophages
- d. Plasma cells
- e. Fibroblasts

436. ABO blood group is being determined. Erythrocyte agglutination occurred when standard sera of group I and group II were introduced into the blood being analyzed, while group III serum caused no agglutination. What agglutinogens do these erythrocytes have?

- a. C
- b. D and C
- c. A and B
- d. B
- e. A

437. 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. Leptospira
- b. Treponema
- c. Borrelia
- d. Campylobacter
- e. Spirilla

438. A 28-year-old patient has accidentally cut himself on a glass. The cut is located on the anterior surface of the forearm, 2 cm below the elbow joint. The patient complains that he cannot rotate his hand inwards. What muscle is most likely to be dysfunctional in this case?

- a. M. flexor pollicis longus
- b. M. pronator quadratus
- c. M. pronator teres

- d. M. flexor digitorum profundus
- e. M. supinator

439. A 50-year-old patient was prescribed ceftriaxone for the treatment of typhoid fever. However, the next day the patient's condition deteriorated, the temperature increased to  $39.6^{\circ}\text{C}$ . What has likely caused the deterioration of the patient's condition?

- a. Addition of a secondary infection
- b. Allergic reaction
- c. Reinfection
- d. Pathogen's resistance to ceftriaxone
- e. Effect of the pathogen's endotoxins**

440. 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. Fibrinohemorrhagic peritonitis
- b. Fibrinopurulent peritonitis**
- c. Serofibrinous peritonitis
- d. Peritoneal commissures
- e. Serous peritonitis

441. A surgeon performs primary surgical treatment of a deep incised wound on the lateral surface of the knee joint. What ligament needs to be sutured in this case?

- a. Lig. collaterale fibulare**
- b. Lig. collaterale tibiale
- c. Lig. popliteum obliquum
- d. Lig. popliteum arcuatum
- e. Lig. patellae

442. During regular examination of schoolchildren, a scrape from the perianal folds of a 10-year-old girl shows asymmetrical oval eggs with larvae inside. What diagnosis can be made?

- a. Amebiasis
- b. Enterobiasis**
- c. Trichuriasis
- d. Ancylostomiasis
- e. Ascariasis

443. A patient with scurvy presents with impaired hydroxylation of collagen proline and lysine. What biochemical process is inhibited in this case, being the reason for this disorder?

- a. Tissue respiration
- b. Lipid peroxidation
- c. Microsomal oxidation**
- d. Peroxidase oxidation of fats
- e. Oxidative phosphorylation

444. 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 renin release due to a decreased blood supply to the kidneys
- b. Increased force and rate of cardiac contractions
- c. Increased volume of the circulating blood
- d. Increased force of cardiac contractions and relaxation of the arterioles due to the effect of lactic acid**
- e. Increased tone of the arterioles and increased volume of the blood depot

445. To relax the skeletal muscles for repositioning of bone shards after a femoral fracture, the patient was given a muscle relaxant, which resulted in a respiratory arrest. After the patient was transfused with fresh citrated blood, his breathing restored. What muscle relaxant was he administered?

- a. Tubocurarine chloride
- b. Pancuronium bromide
- c. Atracurium besilate
- d. Pipecuronium bromide
- e. Dithylin (Suxamethonium)**

446. Certain vessels look like blunt-ended, flattened, endothelial tubes and have no basement membrane or pericytes. Their endothelium is affixed with anchoring filaments to the collagen fibers of the connective tissue. Name these vessels.

- a. Arterio-venous anastomoses
- b. Hemocapillaries
- c. Arterioles
- d. Lymphatic capillaries**
- e. Venules

447. A man complains that at a mention of past tragic events in his life he develops tachycardia, shortness of breath, and a sharp increase in blood pressure. What structures of the central nervous system enable such cardiorespiratory responses?

- a. Lateral nuclei of the hypothalamus
- b. Corpora quadrigemina in the midbrain
- c. Cerebellum
- d. Specific nuclei of the thalamus
- e. Cerebral cortex**

448. A patient with edemas has plasma sodium levels of 160 mmol/L. This condition is caused by a change in the levels of a certain hormone. Name this hormone:

- a. Increased thyroid hormones
- b. Increased aldosterone**
- c. Increased glucocorticoids
- d. Decreased aldosterone
- e. Increased natriuretic hormone

449. As a part of complex therapy for gastric ulcer, the doctor has prescribed an antibiotic to a 30-year-old woman who is at week 32 of her pregnancy. What drug can be recommended in case of such a complication?

- a. Gentamicin
- b. Tetracycline
- c. Azithromycin**
- d. Levomycetin (Chloramphenicol)
- e. Benzylpenicillin

450. 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. Ketoglutarate
- d. Malate
- e. Citrate

451. A microspecimen of the heart demonstrates rectangular cells with a centrally located nucleus and well-developed myofibrils that are connected to each other with intercalated discs. What function is performed by these cells?

- a. Impulse conduction
- b. Protective function
- c. Cardiac contractions**
- d. Endocrine function
- e. Regenerative function

452. S aureus cultures were isolated during bacteriology of sour cream samples. What should be done

to prove the etiological role of an isolated *S. aureus* culture as the causative agent of food poisoning that occurred in a group of consumers that were eating this sour cream?

a. Measuring the plasma coagulase activity

**b. Detection of the enterotoxin**

c. Determining the sucrolytic properties

d. Determining the hemotoxins

e. Measuring the lecithinase activity

453. A patient presents with a pinpoint pupil that does not dilate, when the lighting changes. Where was the central nervous system damaged?

a. Superior colliculi in the midbrain tectum

b. Cerebral peduncles at the level of the superior colliculi in the midbrain tectum

c. Pes pedunculi at the level of the inferior colliculi in the midbrain tectum

d. Lateral geniculate body in the diencephalon

**e. Lateral horn of the spinal cord's gray matter at the level of C8-Th1**

454. 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. Pepsin

**b. Trypsin**

c. Amylase

d. Dipeptidases

e. Lipase

455. A woman with enteritis accompanied by severe diarrhea presents with the loss of water in the extracellular space, increased water content in the cells, and decreasing blood osmolarity. Name this type of water-electrolyte imbalance:

a. Isoosmolar hypohydration

**b. Hypoosmolar hypohydration**

c. Hypoosmolar hyperhydration

d. Hyperosmolar hypohydration

e. Hyperosmolar hyperhydration

456. A 30-year-old man with bacteriologically confirmed dysentery developed signs of paraproctitis. What stage of local changes is the most likely observed in this patient?

**a. Ulcer formation**

b. Nonspecific ulcerative colitis

c. Catarrhal colitis

d. Fibrinous colitis

e. Follicular colitis

457. Chronic overdose of glucocorticoids leads to the development of hyperglycemia in a patient. Name the process of carbohydrate metabolism that results in elevated blood glucose levels:

a. Pentose-phosphate pathway

b. Glycogenesis

c. Aerobic glycolysis

**d. Gluconeogenesis**

e. Glycogenolysis

458. Ingestion of 100 mL of 25% magnesium sulfate solution (saturated) results in profuse liquid stool. Why does it occur?

a. Stimulation of hormone secretion in the duodenum

**b. Increase of intestinal osmotic pressure**

c. Inhibition of intestinal motility

d. Stimulation of gastric juice secretion

e. Decrease of osmotic pressure

459. During the emergency ascent from the depths, a diver developed seizures with loss of consciousness. What is the main pathogenetic mechanism in the development of these disorders?

- a. Toxic effect of nitrogen
- b. Hypoxia
- c. Gas embolism**
- d. Toxic effect of oxygen
- e. Hypercapnia

460. A 10-year-old child, due to the detected tumor, underwent a removal of the posterior pituitary lobe. As a result, the following state will occur:

- a. Increased diuresis**
- b. Delayed growth
- c. Decreased diuresis
- d. Delayed mental development
- e. Hyperglycemia

461. A young man came to a doctor with complaints of pain in his heart. It turns out that he drinks up to 8 cups of coffee per day. What is the effect of the caffeine contained in coffee on the human heart?

- a. Causes tachycardia, increases myocardial oxygen demand**
- b. Slows down conduction in the heart
- c. Increases body temperature
- d. Causes narrowing of coronary vessels
- e. Decreases the force of heart contractions

462. A child is idiosyncratic to a certain medicinal substance, which is caused by:

- a. Depletion of a substrate, with which this medicinal substance interacts
- b. Concomitant disease of a target organ
- c. Hereditary enzymopathy**
- d. Inhibition of hepatic microsomal enzymes
- e. Accumulation of the medicinal substance in the body

463. Autopsy of the body of a woman, who suffered from purulent cholecystitis and died of sepsis, revealed 100 mL of turbid green-yellow fluid in the gallbladder. The gallbladder walls are flaccid, thinned-out, dull, and plethoric. Histologically, there are hyperemia and diffuse neutrophilic infiltration of the gallbladder wall. What type of inflammation is observed in the patient's gallbladder?

- a. Empyema**
- b. Fibrinous inflammation
- c. Chronic abscess
- d. Acute abscess
- e. Serous inflammation

464. 7 days after eating a smoked pork, the patient developed periorbital edemas, myalgia, gastrointestinal disorders, and sharp increase in body temperature. Blood test shows marked eosinophilia. What helminth was transmitted to this patient through the pork?

- a. Ancylostoma
- b. Trichuris
- c. Enterobius vermicularis
- d. Ascaris
- e. Trichinella**

465. Autopsy of the body of a patient who died with signs of cardiopulmonary failure shows deformed bronchi with sack-like protrusions of the bronchial wall and purulent inflammation. Hypertrophy of the right ventricle was detected in the heart. Amyloidosis can be observed in the kidneys. The patient's history indicates that for the last 8 years the patient complained of asphyxia and cough with purulent sputum, the patient's fingers resembled drumsticks. What disease can be characterized by these pathological changes?

- a. Tuberculosis
- b. Abscess
- c. Chronic bronchitis
- d. Bronchiectasis**

e. Acute bronchitis

466. A genetic defect of a  $\text{Na}^+$ -dependent transporter of monosaccharides of the enterocyte membrane causes the development of malabsorption syndrome in newborn babies as a result of impaired absorption. In this case, impaired absorption of the following substance would be observed:

a. Galactose

b. Ribose

c. Maltose

d. Lactose

e. Sucrose

467. Examination of the oral cavity of a 50-year-old man, who smokes for a long time, revealed an irregularly-shaped white plaque on the buccal mucosa. Histology detects thickening of stratified squamous epithelium, parakeratosis, hyperkeratosis, and acanthosis. What pathological process is observed in the patient?

a. Avitaminosis A

b. Leukoplakia

c. Keratoacanthoma

d. Chronic stomatitis

e. Hypertrophic glossitis

468. After surgical removal of the thyroid gland, a patient developed numbness in the extremities. Laboratory analysis shows hypocalcemia. What hormonal agent should be prescribed in this case?

a. Thyroidin

b. Triiodothyronine

c. Thyroxine

d. Calcitonin

e. Parathyrin

469. Enzyme lecithin-cholesterol acyltransferase (LCAT) catalyzes the reaction of cholesterol ether synthesis. It occurs when fatty acid residue transfers from the C-2 position of choline phosphatide (lecithin) to cholesterol. With what fatty acid does cholesterol produce ethers?

a. Linoleic acid

b. Lauric acid

c. Myristic acid

d. Palmitic acid

e. Stearic acid

470. A woman with I (O) Rh<sup>-</sup> blood group married a man with IV (AB) Rh<sup>+</sup> blood group. What blood type and Rh factor can be expected in the children of this couple (excluding the Bombay phenotype)?

a. IV (AB) Rh<sup>+</sup>

b. III (B) Rh<sup>+</sup>

c. I (O) Rh<sup>-</sup>

d. I (O) Rh<sup>+</sup>

e. IV (AB) Rh<sup>-</sup>

471. A patient diagnosed with urticaria was prescribed an antihistamine dimedrol (diphenhydramine). What is the mechanism of action of this drug?

a. Interaction of histamine with receptors in organs

b. B lymphocyte activation

c. Formation of antigen-antibody complex

d. Histamine release

e. Immunoglobulin synthesis

472. During cytostatic chemotherapy, blood test of a patient with bladder cancer shows the following: leukocytes -  $0.8 \cdot 10^9/\text{L}$ , granulocytes -  $0.6 \cdot 10^9/\text{L}$ . What is observed in the patient's white blood cells?

a. Agranulocytosis

b. Leukemoid reaction

- c. Leukemia
- d. Leucopenia
- e. Leukocytosis

473. 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. Muscarinic agonists
- b. Calcium channel blockers
- c. Cholinesterase inhibitors**
- d. Muscarinic antagonists
- e. Angiotensin-converting-enzyme inhibitors

474. Histological microslide of the wall of the eyeball shows a structure with no blood vessels. This morphological feature is characteristic of:

- a. Choroid
- b. Retina
- c. Cornea**
- d. Ciliary body
- e. Iris

475. A person diagnosed with pneumoconiosis and respiratory failure was hospitalized. What component of external respiration is typically affected in this pathology?

- a. Disturbed humoral regulation of external respiration
- b. Disturbed pulmonary perfusion
- c. Disturbed nervous regulation of external respiration
- d. Decreased pulmonary ventilation
- e. Decreased gas diffusion**

476. Based on their ability to be synthesized in the human body, all proteinogenic amino acids are divided into replaceable, essential, and conditionally essential. Which of the listed amino acids is essential?

- a. Phenylalanine**
- b. Proline
- c. Serine
- d. Glutamine
- e. Tyrosine

477. 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 coronary artery**
- b. Right and left coronary arteries
- c. Circumflex branch of the left coronary artery
- d. Left coronary artery
- e. Anterior interventricular branch of the left coronary artery

478. A microbial culture has been grown from a pus sample obtained from a furuncle. It contains spherical microbes, clustered together like a bunch of grapes. What microbes were detected in the culture?

- a. Diplococci
- b. Streptococci
- c. Staphylococci**
- d. Micrococci
- e. Tetrads

479. A 20-year-old woman with intestinal polyposis has a history of frequent fungal and viral diseases. What part of the immune system is most likely to be deficient in this case?

- a. B-lymphocytes
- b. Natural killers

- c. Complement
- d. Phagocytes

**e. T-lymphocytes**

480. An infectious diseases laboratory has received feces of a patient diagnosed with cholera for testing. What method of microbiological diagnostics must be used to confirm or refute this diagnosis?

**a. Bacteriology**

- b. Biological method
- c. Bacterioscopy
- d. Virology
- e. Allergy testing

481. A patient with arrhythmia was hospitalized into the cardiology unit. What antiarrhythmic drug should be prescribed?

a. Acetylsalicylic acid

**b. Amiodarone**

- c. Furacilin (Nitrofuril)
- d. Diclofenac sodium
- e. Drotaverine hydrochloride

482. Transketolase enables the non-oxidative phase of pentose phosphate pathway. It results in accumulation of NADPH and ribose 5-phosphate, which are directly used in the synthesis of:

**a. Nucleotides**

- b. Fatty acids
- c. Vitamins
- d. Amino acids
- e. Lipoproteins

483. Floor of the crypts in the small intestine mucosa contains cells with acidophilic secretory granules and basophilic cytoplasm. These cells function as a part of the antibacterial defense of the body. Name these cells:

**a. Paneth cells**

- b. Columnar epithelial cells
- c. Cervical mucus cells
- d. Endocrine cells
- e. Exocrine goblet cells

484. Residents of areas with a cold climate have increased blood levels of a certain hormone that has an adaptive thermoregulatory value. What hormone is it?

a. Insulin

**b. Thyroxine**

- c. Somatotropin
- d. Glucagon
- e. Cortisol

485. A patient has been hospitalized with complaints of headache, muscle pain during movements, weakness, fever, and edema of the eyelids and face. The doctor suspects that this condition was caused by eating pork bought at an unofficial market. What provisional diagnosis can the doctor make in this case?

- a. Taeniarhynchosis
- b. Opisthorchiasis

**c. Trichinellosis**

- d. Taeniasis
- e. Fascioliasis

486. A 50-year-old patient has been diagnosed with gout. Blood testing revealed hyperuricemia. What metabolism is disturbed in this case?

- a. Metabolism of pyrimidines
- b. Metabolism of amino acids



c. Metabolism of carbohydrates

**d. Metabolism of purines**

e. Metabolism of fats

487. A patient, who was in the area of radiation exposure, developed increased concentration of malondialdehyde and hydroperoxides in the blood. Name the likely cause of these changes:

a. Increased lactic acid levels

b. Increased number of ketone bodies

c. Increased cholesterol levels

d. Decreased levels of blood proteins

**e. Increased number of oxygen radicals and activation of lipid peroxidation**

488. 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. Brainstem injury

b. Motor cortex injury

c. Cerebellar injury

**d. Unilateral right-side spinal cord injury**

e. Midbrain injury

489. A transplanted kidney responds to painful stimuli by stopping urination. What causes this response?

a. Effect of the sympathetic nervous system

**b. Increased secretion of ADH**

c. Decreased secretion of ACTH

d. Decreased secretion of ADH

e. Effect of the parasympathetic nervous system

490. A woman has been hospitalized into the gynecological department with a suspected intraperitoneal hemorrhage (ectopic pregnancy). What anatomical structure must be punctured for the urgent diagnostics of the hemorrhage in this case?

**a. Posterior vaginal fornix**

b. Anterior vaginal fornix

c. Cervix

d. Internal os

e. Anterior vaginal wall

491. A middle-aged man left for another country for a job position promised to him, but for a long time was unable to find a job instead. What endocrine glands in his body would be most exhausted in this situation?

a. Testicles

b. Thyroid gland

c. Thymus

**d. Adrenal glands**

e. Parathyroid glands

492. A patient diagnosed with peptic ulcer disease of the stomach was prescribed a third generation H<sub>2</sub> receptor blocker. Name this drug:

a. Cimetidine

b. Roxatidine

**c. Famotidine**

d. Omeprazole

e. Ranitidine

493. A 21-year-old patient underwent removal of a tumor in the right frontal lobe of the brain. The tumor was 5 cm in diameter, with a blurry margin between it and the surrounding tissues. It looks uniform on section. Histologically, it consists of stellate cells, the numerous processes of which form dense plexuses. What tumor is it?

**a. Astrocytoma**

- b. Oligodendroglioma
- c. Ependymoma
- d. Ganglioneuroma
- e. Choroid papilloma

494. A 65-year-old woman diagnosed with Dressler syndrome was hospitalized into the cardiology department. She has a history of myocardial infarction. What additional clinical and laboratory findings can confirm the diagnosis of Dressler syndrome?

**a. Increased levels of blood autoantibodies**

- b. Fever
- c. Increased activity of aspartate aminotransferase in the blood
- d. Increased ESR
- e. Leukocytosis

495. A woman gave birth to a stillborn child with maldevelopments. What protozoan disease could have caused the intrauterine infection of the fetus?

a. Trypanosomiasis

**b. Toxoplasmosis**

- c. Malaria
- d. Trichomoniasis
- e. Leishmaniasis

496. ECG of a patient with hyperthyroidism shows an increased heart rate. What ECG element will be shortened, indicating this?

- a. P-T interval
- b. P-Q segment

**c. R-R interval**

- d. QRS complex
- e. P-Q interval

497. A patient developed arterial hypertension, tachyarrhythmia, and persistent disturbances of blood circulation in the heart muscle. What drug should be prescribed for a patient with such a pathology?

- a. Nikethamide
- b. Medazepam

**c. Metoprolol**

- d. Salbutamol
- e. Nitroglycerin

498. A patient came to the family doctor complaining of an intense headache. Objectively, the following is observed: blood pressure - 220/110 mm Hg, heart rate - 88/min., respiratory rate - 18/min. An uncomplicated hypertensive crisis has been diagnosed. To provide emergency aid in this case, the doctor chose a short-acting calcium channel blocker. What drug did the doctor prescribe?

a. Felodipine

**b. Nifedipine**

- c. Lercanidipine
- d. Amlodipine
- e. Lacidipine

499. Autopsy of the body of a 38-year-old man, who died suddenly, shows yellowish patches in the intima of the abdominal aorta. The patches do not protrude from the surface. Histologically, a large number of xanthoma cells are detected in the intima. They become bright orange, when stained with Sudan III. What stage of atherosclerosis can be characterized by these pathological signs?

a. Atherocalcinosis

**b. Lipoidosis**

- c. Ulceration
- d. Atheromatosis
- e. Liposclerosis

500. A player injured his knee joint during a football match. X-ray clearly shows a fracture of the bone that is located within the thick of the quadriceps tendon of the thigh. What type of bone is it?

- a. Tubular
- b. Pneumatic
- c. Mixed
- d. Flat

e. Sesamoid

501. 24 hours after an exam the student's blood test shows leukocytosis without significant changes in the leukogram. What mechanism of leukocytosis development is the most likely in the peripheral blood in this case?

- a. Decreased leukocyte destruction
- b. Accelerated leukocyte exit from the bone marrow
- c. Decelerated leukocyte extravasation
- d. Intensification of leukopoiesis

e. Redistribution of leukocytes in the body

502. Radioactive isotope of phosphorus was introduced into the system of artificial cell culture. What organic substances can accumulate this isotope?

- a. Nucleic acids
- b. Polysaccharides
- c. Amino acids
- d. Triglycerides
- e. Disaccharides

503. Preventive examination of a man detects thickened neck, exophthalmos, elevated body temperature, and the pulse of 110/min. What hormones should be measured in the patient's blood in this case?

- a. Thyroxine
- b. Cortisol
- c. Sex hormones
- d. Insulin
- e. Catecholamines

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

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

505. A woman was diagnosed with a cerebral tumor on the ventral surface of the pons. In what artery will a slowdown of blood flow be observed?

- a. A) cerebri media
- b. A) cerebri anterior
- c. A) carotis interna
- d. A) communicans posterior

e. A) basilaris

506. Because of a long-term starving a person's glomerular filtration rate increased by 20%. What is the most likely cause of the change in filtration rate in this case?

- a. Increased permeability of the renal filter
- b. Increased systemic arterial pressure
- c. Increased renal plasma flow
- d. Increased filtration coefficient

e. Decreased oncotic plasma pressure

507. 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. Competitive H1 receptor blockade

b. Suppression of histamine release

c. Independent antagonism with histamine

d. Acceleration of histamine breakdown

e. Inhibition of histamine synthesis

508. A patient diagnosed with tuberculosis was prescribed etiotropic treatment. What antibiotic should be chosen for treatment in this case?

a. Tetracycline

b. Bicillin (Benzathine benzylpenicillin)

c. Rifampicin

d. Cefalexin

e. Levomycetin (Chloramphenicol)

509. An experiment was conducted to measure the skin sensitivity threshold. What patches of skin have the highest sensitivity threshold?

a. Shin

b. Face

c. Dorsal surface of the hand

d. Back

e. Shoulder

510. Examination detected phenylpyruvic acid in patient's urine and elevated phenylalanine levels in the blood. The patient was diagnosed with phenylketonuria. What method can be used to confirm this diagnosis?

a. Twin study

b. Biochemical method

c. Cytogenetics

d. Population statistics

e. Genealogical method

511. Autopsy of a 49-year-old woman who died of chronic kidney failure shows small dense striated kidneys with areas of hemorrhages. Microscopically nuclei of epithelial channels contain hematoxylin bodies; glomerular capillaries resemble wire loops, have thickened basement membranes, and in places contain hyaline thrombi and foci of fibrinoid necrosis. What is the most likely diagnosis?

a. Rheumatism

b. Amyloidosis

c. Atherosclerotic nephrosclerosis

d. Systemic lupus erythematosus

e. Arteriolosclerotic nephrosclerosis

512. A patient diagnosed with essential hypertension is taking enalapril. What is the mechanism of action of this hypotensive drug?

a. Phosphodiesterase inhibitor

b.  $Ca^{++}$  channel blocker

c. Cyclooxygenase inhibitor

d. Angiotensin-converting enzyme inhibitor

e. Angiotensin receptor blocker

513. After the blood supply to the brain was impaired, a person has lost the ability to write letters and digits. In what part of the brain did the pathology occur?

a. Lobus parietalis

b. Lobus frontalis

c. Lobus temporalis

d. Insula

e. Lobus occipitalis

514. The patient's blood test shows a significant increase in the activity of the MB-fraction of CPK

(creatine phosphokinase) and LDH-1. What pathology can it indicate?

a. Myocardial infarction

b. Pancreatitis

c. Hepatitis

d. Rheumatism

e. Cholecystitis

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

a. Splicing

b. Translation

c. Processing

d. Post-translational modification

e. Transcription

516. Because of an injury to the posterior surface of the shoulder, a 35-year-old man has sustained damage to the radial nerve and the artery that passes next to it in the canalis humeromuscularis. What artery has been damaged in this case?

a. A. axillaris

b. A. ulnaris

c. A. profunda brachii

d. A. brachialis

e. A. radialis

517. Toxic damage of hepatocytes and disturbed protein synthesis has caused a sharp drop in the patient's plasma albumin levels and markedly low oncotic pressure. What phenomenon will develop as a result of these changes?

a. Edema development

b. Decreased blood density

c. Decreased ESR

d. Increased rate of diuresis

e. Decreased diuresis

518. A 55-year-old man with a many-year history of mitral insufficiency developed acute heart failure. What pathophysiological type of heart failure can be observed in this case?

a. Hypoxic cardiac damage

b. Cardiac pressure overload

c. Acute cardiac tamponade

d. Coronarogenic cardiac damage

e. Cardiac volume overload

519. The bacteriological laboratory needs to prepare for analysis of materials that are suspected to be contaminated with spores of anthrax causative agent. What diagnostic preparation allows for quick detection of these spores?

a. Enzyme-tagged immunoglobulin

b. Monoclonal antibodies to anthrax causative agent

c. Standard anthrax antigen

d. Anti-anthrax immunoglobulin

e. Anti-anthrax fluorescent serum

520. A person was hospitalized into the intensive care unit in a state of hypoxia, caused by aspiration of vomitus. Objectively, the patient's condition is severe; the skin is moist, pale, and acrocyanotic. Tachypnea, tachycardia, and low blood pressure are noted. Which of the listed signs of acutely progressing hypoxia is an emergency defensive and adaptational reaction of the body?

a. Tachycardia

b. Increased perspiration

c. Skin pallor

d. Low blood pressure

e. Acrocyanosis development

521. 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. Eosinophilia

b. Left shift

c. Basophilia

d. Leukocytosis

e. Leukopenia

522. The breakdown of glycogen in the liver is stimulated by glucagon. What secondary messenger (intermediary) forms in the cell in this case?

a. Carbon monoxide

b. cAMP

c. Nitrous oxide

d. Diacylglycerol

e. cGMP

523. 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. Delta cells of the islets of Langerhans

b. Alpha cells of the islets of Langerhans

c. PP cells of the islets of Langerhans

d. Beta cells of the islets of Langerhans

e. Delta-1 cells of the islets of Langerhans

524. A doctor prescribed sodium valproate as an antiepileptic agent to a patient with grand mal seizures. What is the mechanism of action of this drug?

a. Changes the activity of serotonin receptors

b. Blocks sodium channels and increases GABA levels in the brain

c. Activates the cholesterol catabolism

d. Blocks calcium channels and increases dopamine levels in the brain

e. Increases the activity of hippocampal neurons

525. A patient with an eye injury came to a doctor. Examination of the cornea detects changes in the anterior epithelium. What type of epithelium has undergone changes in this case?

a. Stratified columnar epithelium

b. Pseudostratified epithelium

c. Stratified cuboidal epithelium

d. Non-keratinized stratified squamous epithelium

e. Keratinized stratified squamous epithelium

526. ECG analysis shows that the alpha angle is  $80^\circ$ . What is the position of the electrical axis of the heart in this case?

a. Deviated to the left

b. Deviated to the right

c. -

d. Vertical

e. Horizontal

527. What substances are synthesized in the liver and used in other tissues as alternative metabolic fuels?

a. Ketone bodies

b. Biogenic amines

c. Triacylglycerols

d. Lipoproteins

e. Nitrogenous bases

528. An anti-inflammatory drug that blocks cyclooxygenase activity was used in the treatment of a patient. What anti-inflammatory drug is it?

- a. Creatine
- b. Aspirin (Acetylsalicylic acid)**
- c. Allopurinol
- d. Thiamine
- e. Analgin (Metamizole sodium)

529. On the 3rd day after giving birth, a 29-year-old postparturient woman developed diffuse edema of the right mammary gland with pain on palpation, hyperemic skin in the affected area, and elevated body temperature up to 38°C. Histology of the gland tissue revealed a diffuse cellular infiltration in its stroma, which consisted of a large amount of neutrophilic leukocytes, interstitial edema, and vascular hyperemia. Make the diagnosis:

- a. Chronic productive mastitis
- b. Acute phlegmonous mastitis**
- c. Acute apostematous mastitis
- d. Acute serous mastitis
- e. Chronic suppurative mastitis

530. 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. thyroidea media
- c. V. facialis
- d. V. jugularis externa
- e. V. jugularis interna

531. When examining a biopsy material obtained from the thyroid gland, the pathologist discovered lymphocyte infiltration of the thyroid tissues and destruction of the parenchymal elements. Diffuse lymphocyte infiltration with lymphoid follicles was detected in the stroma. What is the most likely diagnosis?

- a. Papillary thyroid cancer
- b. Graves disease (toxic diffuse goiter)
- c. Undifferentiated thyroid carcinoma
- d. Hashimoto thyroiditis (chronic lymphocytic thyroiditis)**
- e. Solid adenoma of the thyroid

532. Due to early taking of antibiotics by a patient with typical clinical presentation of dysentery, bacteriological analysis of the patient's feces detected no Shigella in the samples. Passive hemagglutination reaction shows a four-time increase in the titer of anti-Shigella antibodies in the patient's paired sera. What does it indicate?

- a. Vaccination reaction
- b. Excludes diagnosis of dysentery
- c. Non-specific reaction
- d. Past history of dysentery
- e. Confirms diagnosis of dysentery**

533. A person at rest presents with significantly increased work of the inspiratory muscles. What can cause this phenomenon?

- a. Slow breathing
- b. Negative intrapleural pressure
- c. Shallow breathing
- d. Reduced minute ventilation
- e. Narrowing of the respiratory tract**

534. A 43-year-old woman against the background of septic shock developed thrombocytopenia; her blood fibrinogen levels are low; fibrin degradation products appeared. The patient developed

petechial hemorrhages. What is the cause of these changes?

a. DIC syndrome

b. Platelet production disorder

c. Exogenous intoxication

d. Autoimmune thrombocytopenia

e. Hemorrhagic diathesis

535. Due to gamma-radiation a segment of DNA chain rotated  $180^\circ$  What mutation occurred in the DNA?

a. Translocation

b. Duplication

c. Replication

d. Deletion

e. Inversion

536. A 55-year-old worker at an animal farm has been hospitalized with complaints of fever, chills, headache, and muscle pain. Believing that he had a case of flu, he was self-treating at home for 9 days after the onset of symptoms. Based on the clinical presentation and patient's history, a doctor provisionally diagnosed him with leptospirosis. What material must be obtained for testing to isolate the pathogen and make laboratory confirmation of the diagnosis?

a. Blood

b. Saliva

c. Cerebrospinal fluid

d. Wound contents

e. Urine

537. A smear prepared from the material obtained from a patient with suspected diphtheria contains yellow bacilli with blue grains at their ends. What staining was used in this case?

a. Ziehl-Nielsen

b. Loeffler

c. Neisser

d. Romanowsky

e. Kozlovsky

538. Examination of a 2-year-old child detected a delay in the child's physical and mental development (cretinism) and decreased levels of thyroid hormones. What hormonal drug should be used as a substitution therapy in this case?

a. Dexamethasone

b. Corticotropin

c. Metformin

d. Thiamazole

e. L-thyroxine

539. The process of collapse progression is associated with nervous system dysfunctions, disturbed pulmonary gas exchange, and disturbances in the systems of blood and hemostasis. These signs of collapse are caused by initial development of the following type of hypoxia:

a. Respiratory hypoxia

b. Tissue hypoxia

c. Circulatory hypoxia

d. Hypoxic hypoxia

e. Hemic hypoxia

540. In the intensive care unit of the infectious diseases department, a doctor notes periods of tachypnea, intermittent with long periods of apnea, in a patient with meningococcal meningitis. What is this type of pathological respiration?

a. Grocco respiration

b. Cheyne-Stokes respiration

c. Apneustic respiration



**d. Biot respiration**

e. Gasping respiration

541. 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. The pathogen reproduces inside the cells

**b. Mycoplasmas have no cell wall**

c. Mycoplasma membrane contains cholesterol

d. Mycoplasmas produce an enzyme that breaks down penicillin

e. Mycoplasmas produce no relevant transport proteins

542. Autopsy of the body of the fetus from the second pregnancy of an Rh-negative woman is being performed. The fetus died in utero on the seventh month of pregnancy. Autopsy shows a widespread edema of the subcutaneous tissue and brain, ascites, enlarged liver and spleen, thymic atrophy, and hypertrophy of the myocardium. Microscopy shows extramedullary hematopoietic foci, as well as dystrophic and necrobiotic changes in the internal organs. What disease can be characterized by these pathological changes?

a. Postpartum icteric form of hemolytic disease

b. Congenital icteric form of hemolytic disease

c. Anemic form of hemolytic disease

d. Hemorrhagic disease of newborn

**e. Edematous form of hemolytic disease**

543. 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. Kinin system

b. Immune system

**c. Renin-angiotensin system**

d. Sympathoadrenal system

e. Hemostatic system

544. For the treatment of glaucoma, the patient was prescribed a diuretic along with other drugs. This diuretic inhibits carbonic anhydrase, reduces the formation of intraocular fluid and improves its efflux. Name this drug.

a. Chlorthalidone

b. Furosemide

c. Hydrochlorothiazide

**d. Acetazolamide**

e. Spironolactone

545. Autopsy shows that the lung tissue has an appearance resembling that of a honeycomb because of bag-like and cylindrical expansions of the bronchi. Microscopically, leukocyte infiltration with a predominance of neutrophils is observed in the wall of the affected bronchi. Elastic muscle fibers and cartilaginous plates are partially destroyed and replaced with connective tissue. Adjacent lung tissue has inflammation foci, areas of fibrosis and sclerosis of vessels, and signs of emphysema. Hypertrophy of the right ventricle is observed in the heart. What disease can be characterized by these pathological changes?

a. Interstitial pneumonia

b. Pulmonary emphysema

c. Pneumofibrosis

d. Chronic bronchitis

**e. Multiple bronchiectasis**

546. 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. Magnesium sulfate**

- b. Isadrinum (Isoprenaline)
- c. Metoprolol
- d. Nitroglycerin
- e. Heparin

547. Phenylketonuria belongs to the following group of molecular metabolic diseases:

- a. Disorders of carbohydrate metabolism
- b. Hereditary diseases of lipid metabolism
- c. Disorders of mineral metabolism

**d. Disorders of amino acid metabolism**

- e. Hereditary diseases of connective tissue metabolism

548. Human immunodeficiency virus has on its surface antigens gp 41 and gp 120 and interacts with target cells of the body. Specify human lymphocyte antigens, with which viral gp 120 develops complementary bond:

- a. CD 28
- b. CD 19

**c. CD 4**

- d. CD 3
- e. CD 8

549. A sample of pus discharged from the patient's urethra was inoculated onto a special nutrient medium, which resulted in growth of pale-blue colonies. Microscopy of these preparations detected Gram-negative bean-shaped diplococci. It is the causative agent of:

- a. Melioidosis
- b. Clamidosi
- c. Syphilis
- d. Tularemia

**e. Gonorrhea**

550. A 50-year-old woman developed hemolytic anemia after mushroom poisoning. Where will the hemolysis of erythrocytes primarily occur in this case?

**a. Bloodstream**

- b. Lymphoid tissue
- c. Bone marrow
- d. Liver and spleen
- e. Kidneys

551. A man is being treated for chronic pneumonia for a long time. Microscopy of sputum smears stained using the Ziehl-Nielsen method reveals red bacilli 0.25x4 microns in size, located separately or sometimes in small clusters. What disease can be suspected?

**a. Pulmonary actinomycosis**

**b. Pulmonary tuberculosis**

- c. Pulmonary candidiasis
- d. Pneumococcal pneumonia
- e. Influenza pneumonia

552. A young man with a history of gonorrhea that was completely treated presents with a case of gonorrhea again. This case can be classified as:

- a. Secondary infection
- b. Mixed infection
- c. Recurrence

**d. Reinfection**

- e. Superinfection

553. Quinolones are the inhibitors of DNA gyrase enzyme. They are used in treatment of urogenital infections. What process do they primarily disrupt?

- a. Repair

- b. Translation
- c. Recombination
- d. Transcription

**e. Replication**

554. A patient has plasma glucose levels of 15 mmol/L, polyuria, thirst. What hormone levels are low in the patient's blood, causing such changes?

- a. Glucagon
- b. Cortisol
- c. Growth hormone-releasing factor
- d. Growth hormone

**e. Insulin**

555. 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. Initiation
- b. Immune suppression of the tumor

**c. Promotion**

- d. Transformation
- e. -

556. 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. Systemic lupus erythematosus
- b. Infectious myocarditis
- c. Essential hypertension

**d. Rheumatism**

- e. Atherosclerosis

557. In the hematology unit a patient with leukemia was prescribed 5-Fluorouracil. This drug:

- a. Inhibits translation
- b. Inhibits transcription
- c. Stimulates DNase

**d. Inhibits DNA synthesis**

- e. Catalyzes replication

558. Pathological examination of the spinal cord of a deceased 70-year-old man shows destruction and a decrease in the number of cells in the nuclei of the cervical and thoracic anterior horns. What functions were impaired in this man during his life?

- a. Sensitivity of the lower limbs
- b. Motor functions of the lower limbs
- c. Sensitivity and motor functions of the upper limbs
- d. Sensitivity of the upper limbs

**e. Motor functions of the upper limbs**

559. 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. Lactic acid

**b. Glucuronic acid**

- c. Sulfuric acid
- d. Uric acid
- e. Pyruvic acid

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

- a. Fascia spermatica interna

- b. Fascia spermatica externa
- c. Fascia cremasterica
- d. Tunica vaginalis testis**
- e. Tunica dartos

561. A 60-year-old man was taking digoxin systematically. His condition first improved and then started to deteriorate. He developed bradycardia and arrhythmia. What is the underlying phenomenon of this state?

- a. Allergy
- b. Material cumulation**
- c. Enzyme induction
- d. Tachyphylaxis
- e. Reduced sensitivity of adrenergic receptors

562. A 25-year-old woman complains of deteriorating vision. Examination revealed a defect in accommodation, the pupil is dilated and unresponsive to light. What muscles are functionally disturbed in this case?

- a. Iris sphincter muscle, ciliary muscle**
- b. Superior oblique muscle, ciliary muscle
- c. Lateral rectus muscle, iris sphincter muscle
- d. Iris dilator muscle, ciliary muscle
- e. Iris sphincter and iris dilator muscles

563. A patient died of secondary bacterial pneumonia. Autopsy revealed pale yellow muscles with numerous foci of calcinosis. In the muscles, microscopy shows dystrophic changes, absence of striations, and reduced glycogen levels. Edema and inflammation were detected in the stroma. The cellular infiltrate is represented by lymphocytes, macrophages, and plasma cells. Sclerotic changes were detected in the heart, lungs, and liver. These pathological changes are characteristic of the following disease:

- a. Myopathy
- b. Systemic scleroderma
- c. Zenker's degeneration of muscles in typhoid fever
- d. Myositis

**e. Dermatomyositis (Wagner-Unverricht-Hepp disease)**

564. 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. Phage typing of the obtained culture
- b. Toxigenicity testing
- c. Inoculation of laboratory animals**
- d. Serological identification of the causative agent
- e. Allergy skin test

565. 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. Falx cerebelli
- e. Tentorium cerebelli**

566. During a surgery, a Meckel's diverticulum was detected in the patient. Where in the gastrointestinal tract is it located?

- a. Duodenum
- b. Jejunum
- c. Ileum**

- d. Cecum
- e. Sigmoid colon

567. A patient with arterial hypertension and signs of angina pectoris was prescribed an antianginal drug that is a calcium antagonist. Name this drug:

- a. Amlodipine
- b. Molsidomine
- c. Pentoxifylline
- d. Anaprilin (Propranolol)
- e. Metoprolol

568. A histological microslide shows an organ with mucosal lamina propria that contains simple tubular glands, consisting mostly of chief and parietal cells, as well as of mucous neck cells. What type of gland is it?

- a. Esophageal glands proper
- b. Esophageal cardiac glands
- c. Pyloric gastric glands
- d. Cardiac gastric glands
- e. Proper gastric glands

569. An electronic microphotography of a part of a kidney shows cells with large secretory granules in their cytoplasm in the wall of afferent and efferent arterioles. What renal structure has such cells?

- a. Loop of Henle
- b. Renal corpuscle
- c. Distal part of nephron
- d. Proximal part of nephron
- e. Juxtaglomerular apparatus

570. After a collision of two cars, one of the drivers has an extremely painful deformity in the middle third of the left shin. The pain intensifies on an attempt to move the left shin. The ends of a bone with triangular section protrude from the wound. The blood loss increases. What bone is likely to be damaged?

- a. Talus
- b. Patella
- c. Tibia
- d. Fibula
- e. Femur

571. Two isolated threshold stimuli were applied to an isolated nerve of a frog one after another. The second stimulus occurred during the phase of depolarization of the action potential. Why in this case will there be only one action potential generated?

- a. Threshold level of nerve depolarization decreased
- b. The second stimulus occurred during the absolute refractory period
- c. Nerve excitability increased
- d. Nerve lability increased
- e. Potassium permeability of the nerve membrane decreased

572. A patient with pheochromocytoma develops tachycardia, elevated blood pressure, and sharp pain in the epigastric region after mental stress. These attacks occur because of:

- a. Activation of the vegetative nuclei of the hypothalamus
- b. Increased synthesis of adrenocorticotrophic hormone
- c. Massive release of catecholamines by the adrenal glands
- d. Release of noradrenaline by sympathetic nerves
- e. Increased secretion of thyroid hormones

573. A man presents with convergent strabismus. What muscle of the eyeball is damaged in this case?

- a. Musculus obliquus oculi superior
- b. Musculus rectus oculi medialis

- c. Musculus rectus oculi lateralis
- d. Musculus rectus oculi inferior
- e. Musculus rectus oculi superior

574. Autopsy of a 3-year-old child shows a tumor in the cerebellum. The tumor has no clear margins separating it from the surrounding tissues. Histologically it is made of small atypical cells with hyperchromic nuclei. This tumor is most likely a:

- a. Medullary sarcoma
- b. Glioblastoma
- c. Sarcoma metastasis
- d. Medulloblastoma**
- e. Cancer metastasis

575. If a dog for a long time is being conditioned in a very precise differentiation, as a result the inhibition processes can be exhausted and a persistent long-term excitation will develop instead. What nervous system pathology can develop in this case?

- a. Fibrillation
- b. Paresis
- c. Neurosis**
- d. Hypokinesia
- e. Athetosis

576. ECG of a 30-year-old man shows the following changes: an area of abnormal contraction, where the P wave is absent, the QRS complex is deformed, and the T wave is negative and inverted in relation to the QRS complex. What pathological condition is observed in the patient?

- a. Atrioventricular extrasystole
- b. Atrial extrasystole
- c. Ventricular extrasystole**
- d. Sinus arrhythmia
- e. Paroxysmal tachycardia

577. Family of a 52-year-old man brought him to a doctor with complaints that he does not understand spoken words, despite being able to speak himself. He cannot read written text, as well. Where is the brain damage localized in this case?

- a. In the cortex of the anterior part of the superior temporal gyrus
- b. In the cortex of the posterior part of the inferior frontal gyrus
- c. In the cortex of the posterior part of the superior temporal gyrus**
- d. -
- e. In the hippocampus

578. A 60-year-old man came to the doctor complaining of chest pain. In his blood serum there is a significant increase of enzyme activity, namely of aspartate aminotransferase, creatine phosphokinase, and its CPK-MB isoenzyme. These changes indicate a pathological process that occurs in the:

- a. Smooth muscles
- b. Pulmonary tissues
- c. Skeletal muscles
- d. Cardiac muscle**
- e. Hepatic tissues

579. 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. Karyolysis
- b. Mitotic activity of nuclei
- c. Karyorrhexis**
- d. Apoptosis
- e. Karyopyknosis

580. A child with von Gierke disease presents with slow growth and enlarged liver and kidneys. Reduced glucose levels and increased levels of fats and uric acid are detected in the child's blood. What enzyme is absent in this case, causing this type of glycogenosis?

- a. Hepatic phosphorylase
- b. Phosphofructokinase
- c. Glucose-6-phosphatase**
- d. Amylo-1,6-glucosidase
- e. Glycogen synthase

581. A few hours after receiving a burn, a focus of necrosis appeared on the skin with hyperemia and edema. What is the main mechanism of intensification of destructive phenomena in the inflammation focus?

- a. Erythrocyte diapedesis
- b. Secondary alteration**
- c. Lymphocyte emigration
- d. Primary alteration
- e. Fibroblast proliferation

582. During dental treatment, a 30-year-old woman was given an injection of a drug, after which she lost pain sensitivity for several hours. What is the mechanism of action of this anesthetic?

- a. Blockade of sodium channels in nerve fibers**
- b. Increasing the potassium permeability of the membrane of nerve fibers
- c. Blockade of calcium channels in nerve fibers
- d. -
- e. Increasing the sodium permeability of the membrane of nerve fibers

583. Analysis of the patient's ECG recorded in the I, II, and III standard leads shows that the P wave is positive in each one of them. What does it indicate?

- a. Ventricular depolarization rate
- b. Direction of atrial depolarization**
- c. Mitral valve condition
- d. Pumping function of the left side of the heart
- e. Atrial depolarization rate

584. For oxidation of fatty acids, a transport system is necessary. Such system must include an alkanolamine that transports fatty acids through the mitochondrial membrane. Name this compound:

- a. Creatinine
- b. Carbamoyl phosphate
- c. Carnosine
- d. Cardiolipin
- e. Carnitine**

585. It is known that people with genetically determined glucose-6-phosphate dehydrogenase insufficiency can develop hemolysis of red blood cells in response to certain antimalarial drugs. Such atypical reaction to medicines is called:

- a. Tolerance
- b. Allergy
- c. Tachyphylaxis
- d. Sensitization
- e. Idiosyncrasy**

586. A patient with an eye trauma was prescribed a substance that induces a long-term (up to 10 days) relaxation of the accommodation muscles. Name this substance:

- a. Pirenzepine
- b. Scopolamine hydrobromide
- c. Methacin
- d. Atropine sulfate**
- e. Pilocarpine hydrochloride

587. A 44-year-old man developed a sharp drop in blood pressure before his death. Autopsy of the body shows an aortic arch aneurysm up to 10 cm in diameter. The aortic intima in its ascending part and in the arch looks wrinkled and is exfoliated; between the intima and the aortic media there are blood clots. In the aortic media, microscopy detects large foci of infiltration with lymphoid, plasma, and epithelioid cells, destruction of elastic fibers, proliferation of connective tissue, and vasculitis vasa vasorum. What disease can be characterized by these changes?

- a. Syphilitic mesaortitis
- b. Nonspecific aortoarteritis
- c. Nodular polyarteritis
- d. Rheumatic aortitis
- e. Atherosclerotic aortic aneurysm

588. Some parasites in their life cycle may have a host that can accumulate the parasite at its invasive stage and facilitate its transmission to the final host. What type of host is it?

- a. Optional host
- b. Obligate host
- c. Definitive host
- d. Additional host
- e. Reservoir host

589. A child was diagnosed with helminths. What changes in the peripheral blood will be observed with this pathology?

- a. Leukocytosis
- b. Basophilia
- c. Eosinophilia
- d. Neutrophilia
- e. Monocytosis

590. Mother of a 12-year-old child came to a gastroenterologist, complaining of loss of appetite and meteorism in her child. Endoscopy shows biliary dyskinesia. There are pear-shaped protozoa with two nuclei and multiple flagella in the duodenal content. What disease is the most likely in this case?

- a. Toxoplasmosis
- b. Lambliasis
- c. Balantidiasis
- d. Amebiasis
- e. Trichomoniasis

591. In fatty infiltration of the liver, the synthesis of phospholipids is disrupted. In this case, the patients are advised to eat more cottage cheese, because it contains a certain substance that can enhance the methylation process in the synthesis of phospholipids. Name this substance:

- a. Glycerin
- b. Cysteine
- c. Ethanolamine
- d. Methionine
- e. Calcium

592. A patient has been diagnosed with mucopolysaccharidosis. In this disease, certain substances typically become deposited in various tissues of the body. Name these substances.

- a. Glycogen
- b. Fructose
- c. Fatty acids
- d. Glycosaminoglycans
- e. Triglycerides

593. In an experiment a dog was administered a certain hormone, which resulted in increased glomerular filtration due to dilatation of the afferent glomerular arteriole and decreased reabsorption of sodium ions and water in the nephron tubules. What hormone was administered?

- a. Vasopressin



- b. Thyroxine
- c. Adrenaline

**d. Atrial natriuretic hormone**

- e. Aldosterone

594. A 44-year-old woman complains of general weakness, pain in the area of her heart, and a significant increase in body weight. Objectively, the following is observed: a moon-shaped face, hirsutism, blood pressure - 165/100 mm Hg, height - 164 cm, weight - 103 kg, accumulation of fat predominantly on the neck, upper shoulder girdle, and abdomen. What is the main pathogenetic mechanism of obesity in this woman?

- a. Increased insulin production
- b. Decreased glucagon production
- c. Decreased production of thyroid hormones

**d. Increased production of glucocorticoids**

- e. Increased production of mineralocorticoids

595. The patient's examination detected an inflammation of a certain anatomical structure that equalizes the pressure between the tympanic cavity and the pharynx. Name this structure:

**a. Eustachian tube**

- b. Inner ear
- c. Internal auditory meatus
- d. External auditory meatus
- e. Major mastoid air cell

596. A 25-year-old man complains of general weakness, chills, and sore throat. Objectively, his tonsillar region is red. His body temperature is  $38.6^{\circ}\text{C}$ . What cells are the main source of endogenous pyrogens that cause the fever in the patient?

- a. B-lymphocytes
- b. Eosinophils
- c. Mast cells
- d. Basophils

**e. Neutrophils**

597. During an abdominal surgery, a reflex cardiac arrest has occurred. Where is this reflex center located?

- a. In midbrain
- b. In medulla oblongata**

- c. In cerebral cortex
- d. In spinal cord
- e. In diencephalon

598. A 2-year-old child on examination presents with hepatosplenomegaly, cataract, and delayed mental development. Blood galactose levels are high. What hereditary pathology is likely in this child?

a. Porphyria

**b. Galactosemia**

- c. Disaccharide intolerance
- d. Phenylketonuria
- e. Hypovitaminosis D

599. A woman complains of itching and burning in her external genitalia and purulent frothy discharge from them. Discharge samples contain unicellular pear-shaped organisms with 4 flagella, undulating membrane, and a spike on one end of their bodies. What species do they belong to?

- a. *Lambia intestinalis*
- b. *Trichomonas vaginalis***
- c. *Entamoeba gingivalis*
- d. *Toxoplasma gondii*
- e. *Trichomonas hominis*

600. A patient with forearm trauma was given Dithylin (Suxamethonium) for muscle relaxation during

bone reduction. Full restoration of the muscle tone and function occurred only after over an hour had passed. What may be the cause of the significant prolongation of curariform effect of the drug?

- a. Genetic deficiency of hydroxylases
- b. Inhibition of microsomal oxidation
- c. Formation of active metabolite
- d. Genetic deficiency of monoamine oxidase
- e. Genetic deficiency of butyrylcholinesterase**

601. Intracellular examination of biopotentials in an isolated tissue culture shows that the action potentials that develop in the cells can be characterized by a plateau for up to 300 milliseconds in the repolarization phase. What tissue is being studied?

- a. Contractile myocardium**
- b. Atypical cardiac muscle cells
- c. Nerve fiber
- d. Skeletal muscle
- e. Smooth muscle

602. Microscopy of a woman's vaginal swab detects cells with cytoplasmic inclusions. The doctor has provisionally diagnosed the patient with chlamydiosis. What test should be used to detect antibodies and confirm this diagnosis?

- a. Enzyme immunoassay**
- b. Vidal's reaction
- c. Precipitation reaction
- d. Reverse indirect hemagglutination
- e. Agglutination reaction

603. A person entered a room with increased levels of carbon dioxide in the air. How will the breathing of this person change?

- a. Respiration rate will decrease
- b. Respiration rate and depth will increase**
- c. Respiration rate will increase
- d. Respiration depth will increase
- e. Respiration depth will decrease

604. Husband and wife are homozygous for one gene. But the husband has dominant alleles of this gene, while the wife - recessive. What pattern of heredity will be observed in their children?

- a. Law of independent assortment
- b. Phenomenon of sex-linked inheritance
- c. Phenomenon of genetic linkage
- d. Law of segregation of genes
- e. Law of uniformity of the first hybrid generation**

605. A person was hospitalized with morphine poisoning. In cases of acute morphine poisoning, a specific antagonist - naloxone - is used. What is the main factor in the development of antagonistic action in such cases?

- a. Decreased sensitivity of the body to morphine
- b. Sharp acceleration of morphine metabolism
- c. Direct stimulation of the respiratory center
- d. Competition for binding to opioid receptors**
- e. Reflex excitation of the respiratory center

606. A patient was hospitalized with complaints of periodic attacks of palpitations that pass on their own. ECG detected an episode of contractions with the rate of 200/min. and the following characteristics: regular rhythm, no P wave, unchanged QRS complex, deformed T wave. What type of arrhythmia is it?

- a. Atrial extrasystole
- b. Paroxysmal supraventricular tachycardia**
- c. First-degree AV block

- d. Ventricular extrasystole
- e. Complete AV block

607. The number of ATP molecules, formed as a result of the oxidation of various substrates in the mitochondrial respiratory chain, is determined by the value of the oxidative phosphorylation coefficient. How is it calculated?

- a.  $ATP/(ADP+AMP)$
- b.  $ATP/ADP$
- c.  $AMP+ADP$
- d.  $CO_2/O_2$
- e. P/O**

608. A 55-year-old man was prescribed an antituberculosis agent as a part of his complex therapy for pulmonary tuberculosis. Which of the listed drugs has antibacterial activity only towards *Mycobacterium tuberculosis*?

- a. Kanamycin sulfate
- b. Cycloserine
- c. Gatifloxacin
- d. Streptomycin sulfate
- e. Isoniazid**

609. Fibrillar elements of connective tissue include collagen, elastin, and reticulin. What amino acid is a component of only collagen and its levels in biological fluids can be used to diagnose connective tissue diseases?

- a. Proline
- b. Hydroxyproline**
- c. Lysine
- d. Phenylalanine
- e. Glycine

610. A patient has been diagnosed with megaloblastic anemia against the background of atrophic gastritis. What drug is used to prevent this type of anemia, when administered parenterally?

- a. Cyanocobalamin**
- b. Piracetam
- c. Prozerin (Neostigmine)
- d. Prednisolone
- e. Celecoxib

611. A 60-year-old patient with diabetes mellitus was found to have ketoacidosis. Biochemically ketoacidosis in diabetes mellitus leads to decreased acetyl-CoA utilization due to deficiency of:

- a. Oxaloacetate**
- b. Aspartate
- c. Alanine
- d. Succinate
- e. Acetate

612. An ovarian tumor was detected in a woman. She is prescribed a surgery. What ligament should be severed by the surgeon to separate the patient's ovary from the uterus?

- a. Suspensory ligament of the ovary
- b. Round ligament of the uterus
- c. Proper ovarian ligament**
- d. Lateral umbilical ligament
- e. Broad ligament of the uterus

613. Ammonia is extremely toxic for human CNS. What is the main way of ammonia neutralization in the nervous tissue?

- a. Formation of paired compounds
- b. Ammonium salts synthesis
- c. Glutamine synthesis**

- d. Urea synthesis
- e. Transamination

614. A 49-year-old patient complains of persistently elevated blood pressure (155/120 mm Hg). The recommended hypotensive therapy, lasting for a month, was ineffective. Additional examination detected hypernatremia, hyponatremia, and adrenal hyperplasia. The diagnosis of primary hyperaldosteronism was made. Because surgical treatment was impossible in this case, the patient was recommended a pharmacological therapy with a mineralocorticoid receptor antagonist. What drug was recommended for the patient?

- a. Captopril
- b. Losartan
- c. Metoprolol
- d. Amlodipine

**e. Spironolactone**

615. After a certain CNS structure had been destroyed in a test animal, this animal lost its orienting reflexes. What structure had been destroyed?

- a. Substantia nigra
- b. Lateral vestibular nuclei
- c. Medial reticular nuclei

**d. Corpora quadrigemina**

e. Red nuclei

616. What changes in hemocoagulation processes will occur in a person, if activity of the sympathetic nervous system increases?

- a. Hemocoagulation will remain unchanged
- b. Fibrinolysis will decrease
- c. Hemocoagulation will decrease
- d. Anticoagulant system will activate

**e. Hemocoagulation will increase**

617. Autopsy of the body of a 63-year-old man, who died of lung cancer, detected multiple metastases. What metastases can be classified as implantation (contact) metastases, based on their mechanism of development?

- a. Metastases into the peribronchial, bifurcation, and paratracheal lymph nodes
- b. Metastases into the brain
- c. Invasion of the tumor from the bronchus into the esophagus

**d. Small multiple tumor nodules on the pleura**

e. Metastases into the adrenal glands

618. A histological specimen shows three neurons: pseudounipolar, bipolar, and multipolar. How many axons can be determined in the each one of the listed cell types?

- a. Many
- b. Three

**c. One**

- d. Two
- e. None

619. A patient, who underwent a long-term glucocorticoid treatment, presents with gastric ulcers. What mechanism is the main one in their development?

- a. Increased tone of the sympathetic nervous system
- b. Increased production of prostaglandins E1 and E2

**c. Increased secretion and acidity of gastric juice**

- d. Decreased levels of histamine in the gastric mucosa
- e. Decreased tone of the parasympathetic nervous system

620. A 40-year-old man with pulmonary tuberculosis was prescribed isoniazid. Prolonged taking of this drug can result in development of the following vitamin deficiency:

**a. Pyridoxine**

- b. Thiamine
- c. Biotin
- d. Folic acid
- e. Cobalamin

621. A 36-year-old man has been diagnosed with herpes simplex of the mucosa of the lips. As a part of complex therapy, the doctor prescribed him a topical drug with antiviral effect. What drug is it?

a. Acyclovir

- b. Rimantadine
- c. Thymalinum
- d. Amikacin
- e. Interferon

622. The corpus luteum forms during the luteal phase of the menstrual cycle. This temporary endocrine gland stimulates the synthesis of a certain hormone. What hormone is it?

- a. Testosterone
- b. Aldosterone
- c. Parathyroid hormone
- d. Corticosterone

e. Progesterone

623. A 5-year-old child was diagnosed with hereditary membranopathy (Minkowski-Chauffard disease). What change in the osmotic resistance of erythrocytes will be observed in this case?

- a. Increased resistance
- b. Increased zone of resistance
- c. Increased amplitude of resistance

d. Decreased resistance

- e. Decreased amplitude of resistance

624. Systemic blood pressure of a person equals 120/65 mm Hg. Blood ejection into aorta occurs when left ventricular pressure exceeds:

- a. 120 mm Hg

b. 65 mm Hg

- c. 90 mm Hg
- d. 100 mm Hg
- e. 10 mm Hg

625. A large cell with weakly basophilic cytoplasm and a bean-shaped nucleus was detected in a smear prepared from peripheral blood. The cell is the largest among the cells in the vision field. What cell is it?

- a. Small lymphocyte

b. Monocyte

- c. Medium size lymphocyte
- d. Plasma cell
- e. Macrophage

626. A patient came to the dentist with complaints of pain and redness of oral mucosa and swollen gums. The patient was diagnosed with herpetic gingivostomatitis. This disease is likely to be caused by:

a. Herpes simplex virus 1

- b. Herpes simplex virus 2
- c. Epstein-Barr virus
- d. Varicella zoster virus
- e. Cytomegalovirus

627. A 55-year-old patient underwent a kidney transplantation. What immunotropic agent should be prescribed in this case?

- a. Sodium nucleinate
- b. Levamisole

c. Prednisolone

d. Thymus extract

e. \gamma globulin

628. A young man underwent an IFA test for HIV antibodies and received a positive result. However, he insists on a test that would be able to definitively prove the presence of antibodies to this virus in him. What test should be conducted to confirm the diagnosis?

a. PCR

b. Immunofluorescence

c. Hemagglutination inhibition test

d. Passive hemagglutination test

e. Immunoblotting

629. 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 phage sensitivity

b. Based on its morphological characteristics

c. Based on its cultural characteristics

d. Based on its antigenic characteristics

e. Based on its toxigenic characteristics

630. What substance indicates increased putrefaction processes in the intestines of a patient with intestinal obstruction, if its excretion with urine has increased?

a. Urobilin

b. Urea

c. Uric acid

d. Indican

e. Creatinine

631. A 63-year-old woman had a gastrointestinal hemorrhage that exposed blood proteins to intestinal microorganisms, i.e. they became a subject of putrefaction. It resulted in an increased concentration of the following substance in the patient's blood:

a. Indole

b. Globulin

c. Creatine

d. Albumin

e. Creatinine

632. In a chemical synapse, excitation is transferred through a neurotransmitter. What ions facilitate the release of the mediator into the synaptic cleft?

a. Chlorine

b. Potassium

c. Sodium

d. Magnesium

e. Calcium

633. Based on the clinical data, the patient was provisionally diagnosed with acute pancreatitis. What biochemical test can confirm this diagnosis?

a. Alkaline phosphatase activity in blood

b. Blood aminotransferase activity

c. Acid phosphatase activity in blood

d. Blood amylase activity

e. Blood creatinine levels

634. One of the causes of pernicious anemia is the disturbed synthesis of transcobalamin - Castle's intrinsic factor - in the parietal cells of the stomach. What substance is called Castle's extrinsic factor?

a. Biotin

b. Cobalamin

- c. Riboflavin
- d. Pyridoxine
- e. Folic acid

635. Examination of a man detects skin calcification, Raynaud syndrome, an esophageal motility disorder, sclerodactyly, and telangiectasia. These changes are called CREST syndrome and are characteristic of the following disease:

- a. Systemic scleroderma**
- b. Dermatomyositis
- c. Gouty arthritis
- d. Rheumatoid arthritis
- e. Systemic lupus erythematosus

636. A 27-year-old patient presents with pathologic changes in the liver and brain. Blood plasma exhibits acute decrease in copper levels, while urine copper levels are elevated. The patient is diagnosed with Wilson disease. To confirm this diagnosis it is necessary to measure activity of the following enzyme in the patient's blood serum:

- a. Alcohol dehydrogenase
- b. Leucine aminopeptidase
- c. Xanthine oxidase
- d. Ceruloplasmin**
- e. Carbonic anhydrase

637. Based on the clinical parameters, the patient has been prescribed pyridoxal phosphate. This drug is recommended for correction of the following processes:

- a. Synthesis of purine and pyrimidine bases
- b. Oxidative decarboxylation of keto acids
- c. Deamination of purine nucleotides
- d. Protein synthesis
- e. Transamination and decarboxylation of amino acids**

638. An older woman has broken her arm four times already. What substance makes bones more fragile, if its concentration is increased?

- a. Binding substance
- b. Water
- c. Extracellular fluid
- d. Organic substances
- e. Nonorganic substances**

639. An infant refuses to be breastfed, is anxious, presents with irregular breathing and specific smell of urine - "beer yeast" or "maple syrup". What enzyme is congenitally deficient in the baby, resulting in this pathology?

- a. Glycerol kinase
- b. Glucose 6-phosphate dehydrogenase
- c. Aspartate aminotransferase
- d. Branched-chain alpha-keto acid dehydrogenase complex**
- e. UDP-glucuronyl transferase

640. A 7-year-old girl has been hospitalized with a high temperature and complaints of a sore throat and general weakness. The doctor suspected diphtheria and gave the instructions to obtain the material from the child's pharynx and isolate a pure culture of the causative agent. What is crucial in this case for the confirmation of the diagnosis?

- a. Cystinase test
- b. Toxigenicity test**
- c. Detection of volutine granules in the causative agent
- d. Phagolysability
- e. Hemolytic ability of the pathogen

641. A patient with obliterating endarteritis has undergone a ganglionic sympathectomy. Positive

therapeutic effect of this surgery is associated with development of arterial hyperemia of the lower limbs, which can be described as:

- a. Neurotonic
- b. Reactive
- c. Metabolic
- d. Neuroparalytic**
- e. Working

642. In the admission room of a hospital, material samples are being taken for bacteriological testing. What is the purpose of taking a material sample from a patient with a purulent lesion of the deep tissues of the leg?

- a. Establishing the etiology of the purulent process and determining the sensitivity to antibiotics**
- b. Determining the pathogen's toxicity
- c. Confirmation of the diagnosis of anaerobic infection
- d. Identification of the pathogen to prevent a nosocomial infection
- e. Identification of the pathogenic staphylococcus and determining the antibiotic resistance profile

643. A 65-year-old woman with insulin-independent diabetes mellitus was prescribed glibenclamide to be taken orally. What is the mechanism of its hypoglycemic action?

- a. Inhibits alpha-glucosidase and breakdown of polysaccharides
- b. Intensifies peripheral glucose utilization
- c. Inhibits glucose absorption in the intestine
- d. Stimulates secretion of endogenous insulin by beta cells**
- e. Inhibits gluconeogenesis in the liver

644. Against the background of ionizing radiation exposure, a decrease in the granulocyte count was detected in the patient's blood. What causes agranulocytosis in this case?

- a. Leukopoiesis inhibition**
- b. Autoimmune process development
- c. Disturbed release of mature leukocytes from the bone marrow
- d. Increased leukocyte destruction
- e. Increased migration of granulocytes into tissues

645. A patient with pulmonary fibrosis presents with decreased pulmonary ventilation. What parameter of the external respiration system will change in this patient?

- a. Expiratory reserve volume will increase
- b. Lung dead space will increase in volume
- c. Vital capacity of the lungs will decrease**
- d. Residual volume will increase
- e. Inspiratory reserve volume will increase

646. You work with the following specimens: 1) brucellosis topical vaccine; 2) leptospirosis vaccine; 3) BCG vaccine; 4) adsorbed diphtheria-tetanus pertussis vaccine (DTP vaccine); 5) tetanus toxoid adsorbed. What kind of immunity do they produce?

- a. Non-sterilizing (infectious) immunity
- b. Artificial passive immunity
- c. Antitoxic immunity
- d. Artificial active immunity**
- e. Antibacterial immunity

647. A patient presents with a sharp decrease in oncotic pressure and albumin levels in the blood plasma. What would be the result of this condition?

- a. Reduced ESR
- b. Increased blood volume
- c. Increased blood density
- d. Reduced diuresis
- e. Edema**

648. A patient diagnosed with chronic tuberculosis was prescribed a complex therapy. What



antituberculosis medicine must be prescribed to the patient?

- a. Butadion (Phenylbutazone)
- b. Thymalin (Thymus extract)

**c. Isoniazid**

- d. Immunal
- e. Beclometasone

649. Laboratory analysis of blood respiratory function determined that the CO<sub>2</sub> transport has worsened. It is likely to be caused by an enzyme deficiency. What enzyme is deficient in this case?

- a. Protein kinase
- b. Phosphorylase
- c. Adenylate cyclase

**d. Carbonic anhydrase**

- e. 2,3-Diphosphoglycerate

650. A patient underwent trepanation and curettage of the air cells in a certain process of the temporal bone, because of an inflammation that spread there from the middle ear. What process of the temporal bone underwent the surgery?

- a. Processus pterygoideus
- b. Processus zygomaticus
- c. Processus styloideus
- d. -

**e. Processus mastoideus**

651. During practical classes the students were studying a stained smear of mouse blood, where the process of heterophagy occurred. What organelles play the key role in this process?

- a. Ribosomes
- b. Mitochondria
- c. Golgi apparatus

**d. Lysosomes**

- e. Granular endoplasmic reticulum

652. A test animal received a concentrated solution of sodium chloride intravenously, which caused a decrease in its reabsorption in the kidney tubules. This phenomenon can be caused by a change in the secretion of a certain hormone. Name this change.

**a. Decreased secretion of aldosterone**

- b. Increased secretion of vasopressin
- c. Decreased secretion of natriuretic factor
- d. Increased secretion of aldosterone
- e. Decreased secretion of vasopressin

653. A patient has been hospitalized with the provisional diagnosis of diphyllbothriasis. What food products could have caused this disease?

- a. Vegetables and fruits
- b. Milk and eggs

**c. Fish**

- d. Beef
- e. Pork

654. What period of the malaria plasmodium life cycle coincides with the manifestation of clinical symptoms of malaria in a patient?

- a. When sporozoites enter the human bloodstream
- b. During gametocyte formation
- c. When merozoites invade erythrocytes

**d. When merozoites emerge from destroyed erythrocytes**

- e. In the period of tissue schizogony

655. A patient with signs of mitral valve insufficiency has a history of rheumatism attacks, accompanied by the inflammation processes in the joints. Which pathological phenomenon in this

case can be classified as a pathological condition?

a. Joint inflammation

**b. Mitral valve insufficiency**

c. Rheumatism

d. Arthritis

e. Rheumocarditis

656. A patient with hereditary hyperammonemia, caused by disturbed ornithine cycle, developed secondary orotaciduria. What metabolite of the ornithine cycle has high levels in this case, causing the increased synthesis of orotic acid?

**a. Carbamoyl phosphate**

b. Urea

c. Ornithine

d. Argininosuccinate

e. Citrulline

657. Oxygen supply of an isolated mammalian nerve cell was completely stopped. How will the resting potential change in this case?

a. Increase insignificantly

b. Remain unchanged

**c. Disappear**

d. Increase significantly

e. Decrease significantly

658. Bacteria entered the alveolar space of an acinus. Here they interacted with the surfactant, leading to activation of the cells localized in the alveolar walls and on the alveolar surface. Name these cells:

**a. Alveolar macrophages**

b. Endothelial cells

c. Type I alveolocytes

d. Type II alveolocytes

e. Clara's cells (club cells)

659. A patient has inner ear damage of vascular genesis. What artery supplies the inner ear with blood through its branches?

a. A. cerebri media

b. A. vertebralis

c. A. cerebri posterior

d. A. cerebri anterior

**e. A. basilaris**

660. An isolated heart was used to study excitation conduction velocity in different areas of the heart. What area had the lowest velocity of excitation conduction?

a. His bundle

b. Atrial myocardium

c. Purkinje fibers

**d. Atrioventricular node**

e. Ventricular myocardium

661. A 36-year-old man was brought into the infectious diseases hospital with profuse diarrhea, signs of exsiccosis, and acute decrease of body temperature. He died of uremia. Autopsy detects a colorless liquid resembling rice water in the lumen of the small intestine; mucosa is hyperemic. Microscopy of the small intestine shows vascular plethora, focal hemorrhages, desquamation of enterocytes, goblet cell hypersecretion, and lymphocytic and leukocytic infiltration of mucosal stroma. What is the most likely diagnosis?

a. Dysentery

b. Typhoid fever

c. Salmonellosis

d. Cholera

e. Crohn disease

662. Autopsy of the body of a 60-year-old man, who had been suffering from fibrocavitary pulmonary tuberculosis for a long time, revealed enlarged kidneys that weigh 180 g each. Renal tissue is dense, white-gray, with a "fatty" sheen. Histology detected homogeneous oxyphilic masses in the renal glomeruli and in the walls of some of the small arteries. When stained with Congo red, these masses colored red-orange. What morphological changes are observed in the kidneys?

a. Secondary amyloidosis

b. Diffuse hyalinosis

c. Local tumor-like amyloidosis

d. Senile amyloidosis

e. Idiopathic amyloidosis

663. A man hospitalized into the neurological department has been diagnosed with brainstem hemorrhages. His condition was accompanied by problems with fine motor skills of his hands, facial animia, and an increase in the somatic muscle tone. What brainstem structure is likely to be damaged in this case, causing this condition?

a. Medial vestibular nucleus (Schwalbe nucleus)

b. Substantia nigra

c. Nucleus of the third pair of cranial nerves

d. Reticular formation

e. Lateral vestibular nucleus (Deiters nucleus)

664. Histone protein synthesis is artificially blocked in a cell. What cell structure will be damaged as a result?

a. Cell membrane

b. Nuclear membrane

c. Golgi apparatus

d. Nucleolus

e. Nuclear chromatin

665. A patient was hospitalized with provisional diagnosis of acute pancreatitis. What enzyme will have a markedly increased activity in the patient's blood and urine in this case?

a. Creatine phosphokinase

b. Alanine aminotransferase

c. Alpha-amylase

d. Aspartate aminotransferase

e. Lactate dehydrogenase

666. An oligomycin antibiotic inhibits ATP synthase. In what process does this enzyme take part?

a. Protein synthesis

b. Oxidative phosphorylation

c. Nucleic acid synthesis

d. Substrate-level phosphorylation

e. Tricarboxylic acid cycle

667. A 55-year-old man suddenly developed strong palpitations and pain in the heart, sudden weakness, increased blood pressure, and irregular pulse with a deficit. ECG has no P waves and a varying duration of RR intervals. What heart rhythm disorder is observed in this patient?

a. Ciliary arrhythmia

b. Respiratory arrhythmia

c. Paroxysmal tachycardia

d. Extrasystole

e. Transverse heart block

668. Acquired immunodeficiencies often are caused by an infection, where causative agents reproduce directly in the cells of the immune system, destroying them in the process. It is characteristic of the following diseases:

a. Infectious mononucleosis, AIDS

b. Tuberculosis, mycobacteriosis

c. Dysentery, cholera

d. Q fever, typhus

e. Poliomyelitis, hepatitis A

669. In a patient with hyperthyroidism, the intensity of energy metabolism is increased. However, the patient complains of decreased physical strength and low working ability. Why are these signs observed?

a. Separation of biological oxidation and oxidative phosphorylation

b. Heart failure

c. Increased AMP levels in muscles

d. Increased levels of ADP and  $H_3PO_4$

e. Accumulation of end products of metabolism in muscles

670. A 16-year-old girl has no hair on the pubis and in the armpits, her mammary glands are underdeveloped, no menstruations. This condition can be caused by the following hormone imbalance:

a. Hyperthyroidism

b. Hypothyroidism

c. Pancreatic islet failure

d. Ovarian failure

e. Adrenal medulla hyperfunction

671. A 50-year-old woman has purulent inflammation of the cervix. Bacterioscopy of purulent secretions from the cervix detected Gram-negative bean-shaped diplococci, located both within the leukocytes and outside of them. Name the causative agent of this purulent inflammation.

a. Haemophilus vaginalis

b. Calymmatobacterium granulomatis

c. Chlamidia trachomatis

d. Neisseria gonorrhoeae

e. Candida albicans

672. 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. Arginine

b. Methionine

c. Glycine

d. Histidine

e. Lysine

673. A patient with alkaptonuria has signs of arthritis and ochronosis. What substance accumulates in the joints in this case, causing pain?

a. Homogentisates

b. Phosphates

c. Urates

d. Carbonates

e. Oxalates

674. A man has facial asymmetry that becomes especially noticeable when he is trying to actively contract his facial muscles. What nerve is functionally impaired in this case?

a. Trigeminal nerve, branch I

b. Facial nerve (motor branches)

c. All branches of the trigeminal nerve

d. Trigeminal nerve, branch III

e. Trigeminal nerve, branch II

675. Laboratory findings of a patient diagnosed with jaundice are as follows: HBsAg-, HBeAg-,

anti-HBsAg+, anti-HBsM-, HCAg+. What disease can be characterized by such laboratory findings?

a. Chronic hepatitis B with low replicative activity

**b. Hepatitis C with history of hepatitis B**

c. Hepatitis B relapse

d. Hepatitis B reinfection

e. -

676. 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. Rapidly progressive glomerulonephritis

b. Acute suppurative interstitial nephritis

**c. Postinfectious glomerulonephritis**

d. Lipoid nephrosis

e. Membranous glomerulonephritis

677. A dental student was hospitalized on day 3 after the onset of the disease. He was provisionally diagnosed with typhoid fever. What method of laboratory diagnostics allows making a microbiological diagnosis?

a. Allergy testing

b. Biological

c. Serological

d. Microscopy

**e. Bacteriological**

678. A 16-year-old boy from the rural area entered the technical school. During a regular Mantoux test, it turned out that this boy had a negative reaction. What tactics should the doctor choose as the most rational in this case?

a. Express diagnostics of tuberculosis using the Price method

b. Urgent isolation of the boy from his groupmates

**c. BCG vaccination**

d. Repeat the test in a month

e. Serodiagnosis of tuberculosis

679. 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 carbohydrates**

b. Mainly containing proteins and carbohydrates

c. Mainly containing lipids and carbohydrates

d. Mixed type

e. Mainly containing proteins and lipids

680. A patient has a chromosomal disorder - Klinefelter syndrome - with the total number of chromosomes being 47 (karyotype XXY). The patient's somatic cells contain sex chromatin in the amount equal to X chromosome number minus 1. In somatic cells, sex chromatin is called:

a. Cabot rings

b. Mallory bodies

c. Jolly bodies

d. Doehle bodies

**e. Barr bodies**

681. A tumor was removed from extraperitoneal fat of a 75-year-old man. The tumor is 16.0x8.0x6.5 cm in size. Microscopically, there are anaplastic cells with marked signs of atypia, polymorphism, and mitotic activity. In some areas there are large deformed cells with sudanophilic vacuoles in their cytoplasm. What is the most likely diagnosis?

a. Angiomyolipoma

b. Leiomyosarcoma

- c. Lipoma
- d. -

**e. Liposarcoma**

682. 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. Beta-oxidation of fatty acids
- b. Lipolysis

**c. Lipogenesis**

- d. Glycolysis
- e. Gluconeogenesis

683. Copper deficiency has an effect on energy metabolism in the human body. What substance becomes deficient as a result of this process?

- a. Succinate dehydrogenase

**b. Cytochrome oxidase**

- c. Arginase
- d. Lactate dehydrogenase
- e. Pyruvate carboxylase

684. Fever development can be characterized by increased levels of acute-phase proteins: ceruloplasmin, fibrinogen, C-reactive protein. Specify the most likely mechanism of this phenomenon:

- a. Heat-induced destruction of body cells
- b. -
- c. Interleukin-2-induced proliferation of T lymphocytes
- d. Basophil degranulation in tissues

**e. Interleukin-1-stimulation of hepatocytes**

685. A tuberculosis patient was prescribed a complex treatment. Isoniazid is a part of this treatment. By its chemical composition this drug can be classified as:

- a. Semi-synthetic antibiotic
- b. Para-aminosalicylic acid derivative

**c. Isonicotinic acid hydrazide derivative**

- d. Streptomycin group antibiotic
- e. Para-aminobenzoic acid derivative

686. Histology of the neck of the proper gastric gland reveals small cells with high nuclear-cytoplasmic ratio and mitotic figures. What is the function of these cells?

- a. Pepsinogen secretion
- b. Endocrine
- c. Secretion of  $\text{Cl}^-$  ions
- d. Protective

**e. Epithelial regeneration**

687. 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. Goblet cells**

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

688. It is known that not all sensory signals are consciously registered by a person. This way brain separates important information from less important information. What part of the brain plays the main role in this process?

- a. Hypothalamus
- b. Basal ganglia
- c. Cerebellum

d. Cerebral cortex

**e. Thalamus**

689. 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 blood hydrostatic pressure in the capillaries
- b. Decreased blood oncotic pressure
- c. Problematic lymphatic efflux
- d. Increased interstitial fluid oncotic pressure

**e. Increased capillary permeability**

690. A 2.5-year-old child is provisionally diagnosed with pharyngeal diphtheria. Smear from the child's mucosa was obtained and inoculated into a coagulated equine serum. What is the purpose of this stage of microbiological diagnostics?

- a. Analysis of antigenic properties
- b. Pure culture isolation**
- c. Determination of toxin serotype
- d. Determination of biochemical properties
- e. Detection of toxigenicity

691. A bite of a venomous snake can provoke hemolytic jaundice in a person. What blood plasma value would be the first to increase in a bitten person?

- a. Urea
- b. Uric acid
- c. Indirect (unconjugated) bilirubin**
- d. Direct (conjugated) bilirubin
- e. Free amino acids

692. A patient has an abscess in the left inguinal region. The patient developed complaints of general weakness, fever that in the evening reaches  $38.5^{\circ}\text{C}$  and normalizes in the morning, and painful red skin in the area of abscess localization. What type of temperature curve can be observed in this patient?

- a. Febris continua
- b. Febris recurrens
- c. Febris remittens
- d. Febris acontinua

**e. Febris hectica**

693. Dystrophic changes in the cardiac muscle are accompanied by dilation of the heart chambers, decreased force of cardiac contractions, increased volume of the blood that remains in the heart chambers during systole, and venous overflow. What medical condition can be characterized by these phenomena?

- a. Tonogenic dilatation
- b. Myogenic dilatation**
- c. Stage of cardiosclerosis
- d. Cardiac tamponade
- e. Developing stage of myocardial hypertrophy

694. A 48-year-old woman has been hospitalized with complaints of weakness, irritability, and sleep disturbances. Objectively, she has yellow skin and sclera. Laboratory testing detects cholemia in the blood, acholic feces, dark urine (bilirubin). What type of jaundice is observed in the patient?

- a. Gilbert syndrome
- b. Parenchymatous jaundice
- c. Hemolytic jaundice
- d. Crigler-Najjar syndrome

**e. Mechanical jaundice**

695. In an experiment, calcium ions were pumped from the synaptic cleft. What effect will it have on the neuromuscular transmission?

- a. The release of the mediator into the synaptic cleft will increase
- b. Depolarization of the end-plate will occur
- c. Hyperpolarization of the end plate will occur
- d. The release of the mediator into the synaptic cleft will decrease**
- e. Action potential of the end-plate will be generated

696. After a compression bandage was applied to a hand injury, the patient developed edema of the fingers, cyanosis, and a decrease in the skin temperature. What type of peripheral circulatory disorder has caused these phenomena?

- a. Thrombosis
- b. Ischemic stasis
- c. Postischemic arterial hyperemia
- d. Ischemia
- e. Venous hyperemia**

697. A woman came to the ophthalmologist with complaints of deteriorating vision. Examination revealed disturbed process of accommodation of the eye. What anatomical structure is functionally disturbed in this patient?

- a. Lig. pectinatum iridis
- b. M. sphincter pupillae
- c. M. dilatator pupillae
- d. M. ciliaris**
- e. Corpus vitreum

698. Patients with ischemic heart disease are usually prescribed small doses of aspirin. This drug inhibits synthesis of platelet aggregation activator, thromboxane A<sub>2</sub>. What substance is this activator synthesized from?

- a. Acetic acid
- b. Homogentisic acid
- c. Malonic acid
- d. Glutamic acid
- e. Arachidonic acid**

699. Obturation of the patient's bile duct resulted in decreased bile flow into the duodenum, which, in turn, caused problems with absorption of:

- a. Lipids**
- b. Mineral salts
- c. Proteins and carbohydrate
- d. Proteins
- e. Carbohydrates

700. 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. Phospholipase C
- b. Adenylate cyclase
- c. Lipoxygenase
- d. Guanylate cyclase**
- e. Cyclooxygenase

701. A 48-year-old man with signs of bilateral spontaneous pneumothorax died. Autopsy of the body detects in his both lungs subpleural blisters 1-3 cm in diameter, filled with air. Outside the blisters, the lungs exhibit increased airiness, the tissue crunches when being cut. What pulmonary pathology is observed in the deceased?

- a. Senile pulmonary emphysema
- b. Idiopathic pulmonary emphysema
- c. Diffuse obstructive pulmonary emphysema
- d. Interstitial pulmonary emphysema



**e. Bullous pulmonary emphysema**

702. A patient with type 2 diabetes mellitus has been prescribed a drug that, besides a hypoglycemic effect, has a hypocholesterolemic effect as well. This drug is a sulfonylurea derivative. What drug is it?

**a. Glibenclamide**

- b. Acarbose
- c. Prednisolone
- d. Insulin
- e. Novocainamide (Procainamide)

703. A patient with bilateral adrenal damage developed dark-brown skin color. Histochemical analysis of the patient's skin shows negative Perls reaction. What pigment caused the skin discoloration in this case?

**a. Melanin**

- b. Hemosiderin
- c. Lipofuscin
- d. Porphyrin
- e. Biliverdine

704. 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. Acute osteomyelitis
- c. Metastasis of pulmonary carcinoma
- d. Osteosarcoma

**e. Multiple myeloma**

705. A nurse was making an intramuscular injection into the posterior surface of the patient's shoulder. Suddenly the patient felt a severe pain in her shoulder muscles, which spread to the posterior surface of the forearm. What nerve was damaged during the injection?

- a. Median nerve
- b. Ulnar nerve

**c. Radial nerve**

- d. Axillary nerve
- e. Musculocutaneous nerve

706. In a traffic accident a man suffered a trauma with massive blood loss. What changes in the peripheral blood are the most likely on the 2nd day after the trauma?

**a. Erythropenia**

- b. Anisocytosis
- c. Hypochromia
- d. Poikilocytosis
- e. Significant reticulocytosis

707. 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. Sputum**

**b. Feces and urine**

- c. Nasal mucus
- d. Pharyngeal mucus
- e. Gastric lavage waters

708. A certain syndrome manifests as damage to the teeth, hair, and bones. Each generation has affected persons. Men and women are affected with equal frequency. What is the type of inheritance of this syndrome?

- a. X-linked dominant

b. Autosomal recessive

**c. Autosomal dominant**

d. Y-linked

e. X-linked recessive

709. Acetylsalicylic acid and glucocorticoids both have a marked anti-inflammatory effect. However, unlike glucocorticoids, acetylsalicylic acid has no effect on the synthesis of:

a. Prostacyclins

**b. Leukotrienes**

c. Thromboxanes

d. Prostaglandins F

e. Prostaglandins E

710. Clinical course of urolithiasis was complicated by the passage of a renal calculus. Where in the ureter is it most likely to stop?

a. 2 cm above the entrance to the urinary bladder

**b. At the border between the abdominal and pelvic segments**

c. In the middle of the abdominal segment

d. 5 cm above the pelvic segment

e. In the renal pelvis

711. During a surgery, the surgeon must find the site, where the portal hepatic vein begins. Name this site:

a. Behind the stomach

b. On the posterior wall of the bursa hepatica

c. In the hepatogastric ligament

**d. Behind the head of the pancreas**

e. Behind the body of the pancreas

712. 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. Demodecosis**

b. Allergy

c. Flea lesions

d. Pediculosis

e. Sarcoptes scabiei lesions

713. A 50-year-old woman has a round neoplasm, 2.5 cm in diameter, in her ovary. On section the neoplasm has a cavity with pale yellow transparent liquid. The inner walls of the cavity are smooth. Macroscopically, this neoplasm can be classified as a:

a. Ulcer

**b. Cyst**

c. Node with an infiltration in its center

d. Node

e. Infiltration

714. A 50-year-old woman has been hospitalized with a closed craniocerebral injury in the area of the occipital bone. Examination revealed impaired gait, disturbed balance, and hand tremors. What part of the brain is damaged in this case?

**a. Cerebellum**

b. Pons

c. Spinal cord

d. Medulla oblongata

e. Diencephalon

715. A patient suffers from ischemic heart disease that disturbs energy supply to the myocardium. What process is the main source of energy for the myocardium?

a. Glycogenolysis

- b. Gluconeogenesis
- c. Fatty acid oxidation**
- d. Proteolysis
- e. Glycolysis

716. A patient takes choleretic drugs. What process, besides bile secretion, do they stimulate?

- a. Gastric motility
- b. Secretion of gastric juice
- c. Water absorption
- d. Intestinal motility**
- e. Secretion of pancreatic juice

717. Increased levels of ammonium salts in the patient's urine can be associated with the development of a pathological condition. What pathological condition is likely in such cases?

- a. Metabolic acidosis**
- b. Hypercholesterolemia
- c. Steatosis
- d. Hyperuricemia
- e. Retention azotemia

718. On the second day after the development of a transmural myocardial infarction, the patient developed a sharp drop in systolic blood pressure to 60 mm Hg, tachycardia of 140/min., dyspnea, and loss of consciousness. What mechanism is the leading one in the pathogenesis of the developed shock?

- a. Decreased stroke volume of the heart**
- b. Intoxication with necrotic decay products
- c. Paroxysmal tachycardia
- d. Anaphylactic reaction to myocardial proteins
- e. Decreased volume of the circulating blood

719. Karyotype of a 5-year-old boy has 46 chromosomes. One of the chromosomes in pair 15 is longer than it is normal, because a part of a chromosome that belongs in pair 21 is attached to it. What type of mutation is present in this boy?

- a. Duplication
- b. Inversion
- c. Deletion
- d. Translocation**
- e. Polyploidy

720. A worker at a factory that produces vanadium compounds presents with increased ossification caused by high calcium levels in his bone tissues. This condition is likely to be associated with the activity of:

- a. Chondrocytes
- b. Osteoclasts
- c. Fibrocytes
- d. Fibroblasts
- e. Osteoblasts**

721. The upper limbs of a person standing upright at rest are slightly flexed. What causes such position of the limbs?

- a. Reflex from vestibular receptors of the vestibular system
- b. Antagonistic reflex on the part of extended lower limbs
- c. Tonic influence of the limbic structures and neocortex
- d. Innate readiness to act
- e. Reflex from muscle spindles when stretching the biceps muscle**

722. A broad-spectrum antimicrobial agent needs to be prescribed for a 4-year-old child. What drug cannot be prescribed to children because of its harmful effect on the development of bone tissue?

- a. Co-trimoxazole (Biseptol)

b. Amoxicillin

c. Doxycycline

d. Ampicillin

e. Chloramphenicol (Levomycesin)

723. Various substances can be used as anticoagulants, including natural polysaccharides. Select a natural polysaccharide among the substances listed below.

a. Enoxaparin

b. Vitamin K

c. Dextran

d. Hyaluronic acid

e. Heparin

724. A medical student was hospitalized into the infectious diseases unit on the 2nd day after the disease onset. The patient is suspected to have infectious mononucleosis. What results of laboratory analysis can confirm this diagnosis immediately on the day of the hospitalization?

a. IgM antibodies to herpes simplex virus were detected

b. Herpesvirus was isolated

c. Cytomegalovirus antibodies were detected

d. IgM antibodies to Epstein-Barr virus were detected

e. Fourfold increase in number of antibodies to Epstein-Barr virus was detected

725. Because of a common bile duct obstruction detected on the X-ray, the bile stopped flowing into the duodenum. What process is expected to become disturbed in this case?

a. Carbohydrate hydrolysis

b. Hydrochloric acid secretion in the stomach

c. Emulsification of lipids

d. Inhibition of salivation

e. Protein absorption

726. A 32-year-old man was diagnosed with acute radiation sickness. Laboratory analysis detected a sharp decrease in platelet serotonin levels. The most likely cause of a decrease in platelet serotonin is a disturbed decarboxylation of:

a. Histidine

b. Serine

c. Tyrosine

d. 5-Oxytryptophan

e. Pyruvic acid

727. Knee-jerk reflex is absent in a person. Where is the spinal cord damaged in this case?

a. L3-L4 segments

b. Th7-Th8 segments

c. Th9-Th10 segments

d. C5-C7 segments

e. L1-L2 segments

728. Anticoagulant therapy is indicated in cases of acute thrombosis. What direct-acting anticoagulant is used if there is a risk of thrombosis?

a. Warfarin

b. Fraxiparine (Nadroparin)

c. Heparin

d. Dipyridamole

e. Pentoxifylline

729. A patient developed a painful red nodule in the area of the lower jaw. Histologically, accumulation of purulent exudate was detected in several hair follicles. What clinical and morphological type of inflammation is observed in this case?

a. Phlegmon

b. Furuncle

- c. Felon (panaritium)
- d. Abscess

**e. Carbuncle**

730. When examining a patient with bleeding wounds on the skin of the head, a doctor detected tissue damage caused by larvae, as well as local areas of suppuration. The diagnosis of obligate myiasis was established. What pathogen causes this condition?

- a. Glossina (Tsetse fly)
- b. Musca domestica

**c. Wohlfahrtia magnifica**

- d. Triatominae
- e. Stomoxys calcitrans

731. A man has a hip joint injury. X-ray clearly detects an intra-articular hemorrhage. What ligament has been ruptured in this case?

- a. Lig. transversum acetabuli
- b. Zona orbicularis
- c. Lig. iliofemorale
- d. Lig. ischiofemorale

**e. Lig. capitis femoris**

732. 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. Method of isolation of a bile culture

**b. Method of isolation of a blood culture**

- c. Method of isolation of the causative agent from the cerebrospinal fluid
- d. Method of isolation of a stool culture
- e. Method of isolation of a urine culture

733. A 6-year-old child developed hyperergic inflammation of the upper respiratory tracts. The risk of developing a severe respiratory disorder arose, necessitating the use of anti-inflammatory hormones. What hormone has an anti-inflammatory effect?

- a. Testosterone

**b. Cortisol**

- c. Insulin
- d. Adrenaline
- e. Somatotropin

734. A 62-year-old woman diagnosed with arterial hypertension was prescribed an angiotensin-converting enzyme inhibitor. In this case, the production of a certain bioactive substance will decrease. Name this substance:

**a. Angiotensin II**

- b. Angiotensinogen
- c. Angiotensin I
- d. Renin
- e. Noradrenaline

735. Blood test shows low hemoglobin levels. What function of the blood will be disturbed in this case?

- a. Nutrient transport
- b. Coagulability

**c. Gas transport**

- d. Hormone transport
- e. Immunity maintenance

736. A 45-year-old man with acute pneumonia was prescribed a penicillin antibiotic. However, when tested for personal tolerance to this antibiotic, he developed an allergic response. What drug should be prescribed for treatment instead?

- a. Phenoxymethylpenicillin

b. Bicillin-5

c. Ciprofloxacin

d. Benzylpenicillin

e. Erythromycin

737. A 9-month-old baby is on formula-feeding. Formula used to feed the baby is imbalanced in its B<sub>6</sub> vitamin content. The child presents with convulsions that are likely to be caused by disturbed formation of:

a. Histamine

b. Serotonin

c. Dopamine

d. GABA

e. beta-alanine

738. A 10-year-old child underwent a Mantoux test (with tuberculin). After 48 hours, a papule up to 8 mm in diameter appeared at the site of tuberculin injection. What type of hypersensitivity reaction developed after administration of tuberculin?

a. Type IV hypersensitivity reaction

b. Atopic reaction

c. Type II hypersensitivity reaction

d. Serum sickness

e. Arthus reaction

739. Examination of a 70-year-old man detected impaired motor functions. The doctor associates this with age-related changes in the hyaline cartilage. What age-related changes caused the reduction of movements in the joints?

a. Thickening of the perichondrium

b. Deposition of calcium salts in the intercellular substance

c. Increased number of isogenous groups

d. Increased hydrophilicity of the basal substance

e. Increased number of cartilage cells

740. 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. Microfibrils

c. Ribosomes

d. Mitochondria

e. Centrosome

741. After partial pancreatic resection the patient developed steatorrhea, which indicates disturbed digestion of fats in the intestine. It is caused by deficiency of the following enzyme:

a. Amylase

b. Gastricsin

c. Trypsin

d. Lipase

e. Pepsin

742. Patients suffering from diseases of internal organs often assume forced positions (for example, bending their legs and tucking them up to the abdomen). What type of reflex is it?

a. Motorvisceral

b. Dermatovisceral

c. Viscerovisceral

d. Viscerodermal

e. Visceromotor

743. A 6-year-old child died of respiratory failure due to paralysis of the respiratory muscles. Histology of the thoracic spinal cord shows hyperemia, a smoothed out pattern of the gray matter, droplet hemorrhages, small concave areas of softened brain tissues, and inflammation with proliferation of

neuroglia around dead neurons. What disease can be characterized by these pathological changes?

- a. Cytomegaly
- b. Poliomyelitis**
- c. Meningococcal infection
- d. Adenovirus infection
- e. Toxoplasmosis

744. A 48-year-old man is unconscious. He has a history of several syncopal episodes with convulsions. ECG shows deformed QRS complexes unconnected with P waves, atrial contractions are approximately 70/min., ventricular contractions - 25-30/min. Name the type of arrhythmia in this case:

- a. Complete atrioventricular block**
- b. First-degree atrioventricular block
- c. Intraventricular block
- d. Second-degree atrioventricular block
- e. Intraatrial block

745. A 32-year-old man has been suffering from chronic glomerulonephritis accompanied by nephrotic syndrome for the last four years. Edemas are observed on his face. Recently edemas appeared on his legs and trunk as well. What mechanism is most characteristic of the edema development in this man?

- a. Increased oncotic pressure of the interstitial fluid
- b. Increased permeability of capillaries
- c. Impaired lymphatic efflux
- d. Reduced oncotic blood pressure**
- e. Increased hydrostatic blood pressure in the capillaries

746. A patient is allergic to pollen. How should the specific hyposensitization of the body be carried out?

- a. Repeated introduction of small doses of the allergen, with gradually increasing doses**
- b. Repeated introduction of large doses of the allergen, with gradually reducing doses
- c. Administration of corticosteroid drugs
- d. Administration of an anesthetic
- e. Administration of an antispasmodic drug

747. The diseases listed below are associated with genetic factors. Hereditary predisposition is observed in the following pathology:

- a. Sickle cell anemia
- b. Diabetes mellitus**
- c. Phenylketonuria
- d. Huntington's chorea
- e. Daltonism

748. In a vertical position, the patient loses his balance and almost falls down, when his eyes are closed. What part of his brain is likely to be damaged?

- a. Limbic system
- b. Thalamus
- c. Basal ganglia
- d. Cerebellum**
- e. Precentral gyrus of the cerebral cortex

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

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

750. Eubiotic colicin is used for disease treatment and prevention. This protein suppresses the growth of pathogenic microorganisms. Colicin can be synthesized in the intestine by non-pathogenic bacilli. What structure codes the ability of a bacterial cell to synthesize colicins?

- a. Ribosome
- b. Nucleus
- c. Nucleoid
- d. Plasmid**
- e. Mesosome

751. A woman has been diagnosed with the bone marrow syndrome of acute radiation sickness. What hematological symptoms will be observed during the height of the disease?

- a. Relative lymphocytosis
- b. Pancytopenia**
- c. Left-shift of the leukogram
- d. Relative lymphopenia
- e. Erythrocytosis

752. A patient, who works in an underground mine, has developed pulmonary fibrosis. What can be detected by spirometric testing in this case?

- a. Normal airway resistance
- b. Increased vital capacity of the lungs
- c. Decreased vital capacity of the lungs**
- d. Increased airway resistance
- e. Decreased airway resistance

753. Investigation of an outbreak of a hospital-acquired infection is being conducted. Pure cultures of *Staphylococcus aureus* were obtained from patients, healthcare workers, and some objects on the premises. It is necessary to determine whether these staphylococci are identical to each other and to find the source of the hospital-acquired infection. What test must be conducted for this purpose?

- a. Animal inoculation
- b. Phage typing**
- c. Biovar determination
- d. Determination of pathogenicity
- e. Serotyping

754. A 28-year-old woman was admitted to the gynecological department with complaints of abdominal pain. An ovarian tumor was clinically detected. Its surgical removal is indicated. During such surgery, it is necessary to cut the ligament connecting the ovary with the uterus. What ligament must the surgeon cut in this case?

- a. Lig. Suspensorium ovarii
- b. Lig. Cardinali
- c. Lig. Umbilicale laterale
- d. Lig. Ovarii proprium**
- e. Lig. Latum uteri

755. Analysis of the primary structure of a globin molecule revealed that glutamic acid had been replaced with valine. What hereditary pathology is it characteristic of?

- a. Favism
- b. Minkowski-Chauffard disease
- c. Thalassemia
- d. Sickle cell anemia**
- e. Hemoglobinosis

756. Autopsy of a 58-year-old man, who for a long time has been drinking alcohol in large amounts and died at home, is being conducted. Macroscopically the right lung is dense and enlarged, its tissue is gray and homogeneous on section, its pleura is covered with grayish membranous deposits. Microscopically the alveolar cavities contain fibrin threads, neutrophils, and hemolysed erythrocytes. Make the diagnosis:



- a. Interstitial pneumonia
- b. Focal pneumonia
- c. Caseous pneumonia
- d. Primary pulmonary tuberculosis
- e. Croupous pneumonia**

757. After the introduction of a large dose of antibodies into the glomerular basement membrane of the kidney, the experimental animal developed acute glomerulonephritis. This pathology is based on the following type of allergic reaction according to the Gell-Coombs classification:

- a. Immune complex-mediated
- b. Stimulating
- c. Cytotoxic**
- d. Anaphylactic
- e. Delayed hypersensitivity

758. 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. True (capillary) stasis
- b. Arterial hyperemia
- c. Angiospastic ischemia**
- d. Venous stasis
- e. Venous hyperemia

759. Histological microslide of a certain endocrine gland shows epithelial bands that consist of chromophile (acidophilic, basophilic) and chromophobe cells. What organ is it?

- a. Adrenal gland
- b. Adenohypophysis**
- c. Pineal gland
- d. Neurohypophysis
- e. Thyroid gland

760. A 40-year-old man, a butcher, died of sepsis. On his right cheek there is a dense dark-red cone-shaped infiltration, 6 cm in size, with a black scab in its center. The right half of his face and neck are markedly swollen and dense. In the infiltration, microscopy detects a peracute sero-hemorrhagic inflammation. Epidermis and its underlying layers are necrotic in the center of the infiltration. What diagnosis was made by the pathologist?

- a. Tularemia
- b. Anthrax**
- c. Furuncle
- d. Phlegmon of the neck
- e. Plague

761. In a kindergarten, the majority of the children suddenly developed symptoms of gastroenteritis. The symptoms appeared a few hours after eating milk porridge. Bacteriology of vomitus and porridge leftovers allowed isolating *Staphylococcus aureus*. What study is necessary to clarify the source of the infection?

- a. Study the presence of antibodies in the sick children
- b. Perform phage typing of the obtained strains**
- c. Perform allergy testing
- d. Determine the ability of the strains to produce toxins
- e. Examine the kitchen equipment

762. 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. Necrotic nephrosis**

- b. Hydronephrosis
- c. Acute glomerulonephritis
- d. Acute pyelonephritis
- e. Amyloidosis

763. A lymphocyte was infected with HIV (AIDS) retrovirus. What is the direction of information transmission in the cell in this case?

- a. DNA > polypeptide > mRNA
- b. RNA > DNA > mRNA > polypeptide**
- c. mRNA > polypeptide > DNA
- d. DNA > mRNA > polypeptide > DNA
- e. Polypeptide > RNA > DNA > mRNA

764. Examination of the cells of the buccal mucosa obtained from a woman detected no sex chromatin. What medical condition is likely in this case?

- a. Lesch-Nyhan syndrome
- b. Trisomy X
- c. Turner syndrome**
- d. Down syndrome
- e. Wilson disease

765. X-ray detects a shadow in the area of the patient's dural sinus that runs from the crista galli of the ethmoid bone of the skull to the internal occipital protuberance. In this case, pathological changes can be detected in the area of the following sinus:

- a. Sinus rectus
- b. Sinus sagittalis inferior
- c. Sinus transversus
- d. Sinus sigmoideus
- e. Sinus sagittalis superior**

766. Patients diagnosed with diabetes mellitus often present with inflammatory processes, reduced regeneration, and slow healing of wounds. What is the cause of this phenomenon?

- a. Intensified catabolism
- b. Increased lipolysis
- c. Decreased proteosynthesis**
- d. Accelerated gluconeogenesis
- e. Decreased lipolysis

767. The infectious diseases department received a patient with acute respiratory viral disease and body temperature of  $39.5^{\circ}\text{C}$ . What antipyretic drug should be prescribed in this case?

- a. Adrenaline hydrochloride
- b. Retabolil (Nandrolone)
- c. Salbutamol
- d. Ambroxol
- e. Paracetamol**

768. A lab rat has subcutaneously received mercury(II) chloride in the amount of 5 mg/kg. 24 hours later the plasma creatinine concentration increased several times. What mechanism of retention azotemia is observed in this case?

- a. Decreased glomerular filtration**
- b. Increased creatinine reabsorption
- c. Increased glomerular filtration
- d. Increased creatinine secretion in the renal tubules
- e. Increased creatinine production in the muscles

769. Histological analysis of a biopsy skin sample obtained from a 24-year-old patient detects caseous necrosis surrounded with cellular infiltrate consisting of lymphocytes, among which there are single giant cells; proliferation of connective tissue and endovasculites are observed. Characterize this pathologic process:

- a. Proliferative interstitial inflammation
- b. Catarrhal inflammation
- c. Abscess
- d. Ichorous inflammation

**e. Proliferative granulomatous inflammation**

770. 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. Hypoproteinemia
- d. Positive fluid balance

**e. Elevated filtration pressure**

771. A 30-year-old man with an incised wound on the plantar surface of the left foot was brought to the traumatology department. Lifting of the lateral side of the foot is limited. What muscle is likely to be functionally disturbed?

- a. Triceps muscle of calf
- b. Soleus muscle
- c. Flexor hallucis longus muscle

**d. Peroneus longus muscle**

e. Anterior tibial muscle

772. While playing football, a boy has injured his muscles. When he came to a doctor, he complained about his inability to extend his lower leg. What muscle is damaged in this case?

- a. Quadratus lumborum muscle
- b. Piriformis muscle
- c. Biceps femoris muscle

**d. Quadriceps femoris muscle**

e. Semitendinosus muscle

773. After a prolonged protein-free diet a student developed edema. Her condition indicates a decrease in the following blood protein fractions:

- a. Transferrin
- b. Fibrinogen

**c. Albumins**

- d. Globulins
- e. Plasminogen

774. During a surgery on the posterior mediastinum there is a risk of damaging the nerves located near the esophagus. Name these nerves:

- a. Intercostal nerves
- b. Phrenic nerves
- c. Glossopharyngeal nerves

**d. Vagus nerves**

e. Accessory nerves

775. A doctor suspects diphtheria in a patient. Bacterioscopy of a throat swab detected rod-shaped bacteria with volutin granules. What etiotropic drug would be the drug of choice in this case?

**a. Antidiphtheric antitoxic serum**

- b. Interferon
- c. Bacteriophage
- d. Diphtheria toxoid
- e. Eubiotic

776. During blood transfusion, it is recommended to transfer only the blood of the corresponding group. In ABO system the blood group is determined by:

- a. Protein-polysaccharide components of leukocytes
- b. Carbohydrate determinants of leukocyte membranes

- c. Blood serum proteins
- d. Protein determinants of erythrocyte membranes
- e. Carbohydrate determinants of erythrocyte membranes**

777. Oxygen tension in the arterial blood of a person has increased to 104 mm Hg., while carbon dioxide tension has been reduced to 36 mm Hg. It is likely to be caused by:

- a. Holding one's breath
- b. Intense physical exertion
- c. Voluntary hyperventilation**
- d. High altitude
- e. Moderate physical exertion

778. The act of chewing is disturbed in a patient, because a pathological process has affected the structures that form the afferent pathway of the relevant reflex arc. What nerve is damaged in this patient?

- a. N. hypoglossus
- b. N. glossopharyngeus
- c. N. vagus
- d. N. glossopharyngeus and n. vagus
- e. N. trigeminus**

779. A man has asked a cosmetologist to remove a tattoo from his shoulder. What substance, contained in the connective tissue, limits the spread of the dye?

- a. Collagen
- b. Hyaluronic acid**
- c. Hyaluronidase
- d. Elastin
- e. Fibronectin

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

- a. Golgi tendon organ
- b. Nociceptors
- c. Muscle spindles**
- d. Tactile receptors
- e. Articular receptors

781. A 47-year-old woman has interphalangeal and metacarpophalangeal joints that can be easily dislocated or subluxated and a characteristic deviation of the fingers that resembles "walrus flippers". Microscopy reveals proliferation of synovial villi, cartilage destruction, and pannus formation. What disease causes these pathological changes?

- a. Rheumatoid arthritis**
- b. Systemic lupus erythematosus
- c. Ankylosing spondylitis (Bekhterev's disease)
- d. Osteoarthritis
- e. Rheumatic arthritis

782. Examination shows that the patient's apical beat is displaced 3.5 cm to the left from the left midclavicular line. What heart chambers are likely to be hypertrophic in this case?

- a. Left atrium
- b. All heart chambers
- c. Right ventricle
- d. Right atrium
- e. Left ventricle**

783. Prolonged vomiting resulted in dehydration of the patient's body. Under these conditions, water retention in the body is ensured primarily due to increased secretion of the following hormone:

- a. Adrenaline
- b. Natriuretic hormone

- c. Calcitonin
- d. Aldosterone
- e. Vasopressin**

784. A patient was given salbutamol to stop a bronchial asthma attack that occurred during the tooth extraction. Name the pharmacological group of this drug.

- a. Muscarinic agonists
- b. Analeptics
- c. Adaptogens
- d. beta\_2-adrenergic agonists**
- e. Narcotic analgesics

785. A patient has developed severe muscle weakness as a result of combined digitoxin and furosemide therapy for chronic heart failure. What electrolyte imbalance will be observed in the patient's blood in this case?

- a. Hypocalcemia
- b. Hypercalcemia
- c. Hypokalemia**
- d. Hypochloremia
- e. Hyperkalemia

786. A woman has clinical diagnosis of gonorrhea. What type of analysis can be used to confirm this diagnosis?

- a. Inoculation of test animals
- b. Bacteriophage test
- c. Hemagglutination reaction
- d. Microscopy of pathologic material**
- e. Immobilization reaction

787. A young woman, a foreign student from Tehran, has made an appointment with the urologist. She complains of the sensation of heaviness in her lower abdomen and a small amount of blood being excreted with urine at the end of each urination. Microscopy of urine detects the presence of parasite eggs, approximately 140x70 micron in size, with a terminal spike. What diagnosis can be made by the infectious diseases specialist?

- a. Schistosomiasis**
- b. Dicroceliasis
- c. Paragonimiasis
- d. Opisthorchiasis
- e. Fascioliasis

788. Histology of the thyroid gland that was removed in the course of a surgery reveals destruction and atrophy of the follicles and a diffuse lymphocytic infiltration with formation of lymphoid follicles in the stroma. This type of thyroiditis belongs to the following group of diseases:

- a. Caused by physical factors
- b. Viral
- c. Autoimmune**
- d. Bacterial
- e. Infectious-allergic

789. The course of hemorrhagic shock was complicated by the development of acute renal failure in the patient. What is the initiating link in the mechanism of development of this complication?

- a. Release of vasopressin into the blood
- b. Development of DIC syndrome
- c. Activation of the sympathoadrenal system
- d. Centralization of blood circulation with development of renal ischemia**
- e. Increased permeability of the capillary wall

790. A laboratory received a sample of the patient's sputum. It is necessary to perform bacteriological tests for tuberculosis. What technique should the medical laboratory scientist use to stain the

preparation for detection of mycobacteria?

- a. Romanowsky-Giemsa
- b. Ziehl-Neelsen**
- c. Methylene blue
- d. Fuchsin
- e. Gram

791. The Wasserman reaction is markedly positive (++++ ) in a 30-year-old man. What infectious disease is diagnosed using the Wasserman reaction?

- a. Syphilis**
- b. Poliomyelitis
- c. Brucellosis
- d. Influenza
- e. Tuberculosis

792. A patient with kidney disease presents with elevated blood pressure. What kidney structures cause this symptom?

- a. Cells of proximal tubules
- b. Juxtaglomerular cells**
- c. Cells of nephron loop
- d. Cells of macula densa
- e. Cells of distal tubules

793. A patient with a suspected systemic disease underwent a biopsy of an area of increased density and immobility in the skin. In the dermis, the study detected all types of connective tissue disorganization with a weak cellular reaction, gross sclerosis, and hyalinosis. What disease can be characterized by these pathological changes?

- a. Psoriasis
- b. Polyarteritis nodosa
- c. Scleroderma**
- d. Systemic lupus erythematosus
- e. Dermatofibroma

794. A patient with essential hypertension was prescribed a drug that inhibits angiotensin-converting enzyme (ACE). What drug is it?

- a. Nifedipine
- b. Carvedilol
- c. Lisinopril**
- d. Colestyramine
- e. Losartan

795. Microscopy of the stools of a patient with profuse diarrhea, repeated episodes of vomiting, and increasing intoxication detected Gram-negative rod-shaped microorganisms that resembled a comma and were arranged in groups that looked like shoals of fish. A culture of the pathogen was isolated using the storage medium - 1% peptone water, where it formed a delicate film. What disease can be caused by the pathogen that was isolated in this case?

- a. Shigellosis
- b. Salmonellosis
- c. Intestinal yersiniosis
- d. Cholera**
- e. Pseudotuberculosis

796. A 45-year-old man, who had been taking large doses of paracetamol to treat a cold, developed oliguria and azotemia. 5 days later he died with signs of acute renal failure. Renal histology shows diffuse edema of the medullary interstitium infiltrated with lymphocytes, eosinophils, and single neutrophils; renal tubular epithelium is destroyed; glomerular changes are mild. What is the most likely type of kidney damage in this case?

- a. Nephroses**

b. Pyelonephritis

**c. Tubulointerstitial nephritis**

d. Nephrotic syndrome

e. Acute glomerulonephritis

797. A patient, who has been undergoing treatment for neurosis with Sibazone (Diazepam), developed a toothache. A doctor prescribed the patient an analgesic in the dose that was lower than the average therapeutic dose. What phenomenon did the doctor take into account when reducing the dose of the drug?

a. Summation

b. Tolerance

c. Addiction

**d. Potentiation**

e. Cumulation

798. 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. Cartilage tissue**

c. Bone tissue

d. Adipose tissue

e. Reticular tissue

799. A 65-year-old woman, who had been suffering from deep vein thrombophlebitis of the lower leg, suddenly died when awaiting her appointment with the doctor. Autopsy revealed loose friable red masses with corrugated dull surface in the main pulmonary artery and its bifurcation. What pathologic process was discovered by the pathologist in the pulmonary artery?

a. Foreign body embolism

b. Tissue embolism

c. Thrombosis

d. Fat embolism

**e. Thromboembolism**

800. Examination of a man detected athetosis and chorea. The doctor suspects damage to the following structures of his central nervous system:

a. Cerebellum

b. Limbic system

**c. Corpus striatum**

d. Hypothalamus

e. Medulla oblongata

801. After a baby is born, the vascular system of the newborn undergoes changes associated with the transition from the placental circulation to the pulmonary circulation. What blood vessel transforms into the round ligament of the liver as a result of this process?

a. Ductus venosus

b. A) umbilicalis sinistra

**c. V. umbilicalis**

d. A) umbilicalis dextra

e. Ductus arteriosus

802. Against the background of an allergic reaction, a child has developed laryngeal edema. What type of respiratory failure developed in this case?

a. Perfusion failure

b. Diffusion failure

c. Restrictive type

**d. Obstructive type**

e. Dysregulatory type

803. A 6-year-old girl presents with acute onset of a disease. She developed sore throat and high temperature that were later accompanied by a punctate skin rash. Oral examination reveals acute pharyngeal hyperemia, raspberry tongue, and enlarged bright red tonsils with dull gray and yellow foci that spread to the peritonsillar tissues. The submandibular lymph nodes are enlarged. What disease are these changes characteristic of?

- a. Pharyngeal diphtheria
- b. Meningococcal nasopharyngitis
- c. Laryngeal diphtheria
- d. Scarlet fever**
- e. Measles

804. The substances are excreted from the cell, when membrane structure of the Golgi apparatus connects to the cell membrane. The content of this structure is then expelled from the cell. This process is called:

- a. Osmosis
- b. Exocytosis**
- c. Pinocytosis
- d. Endocytosis
- e. Facilitated diffusion

805. An infant presents with colored sclerae and mucous membranes. The infant's urine becomes dark when exposed to air. Homogentisic acid was detected in blood and urine. What disease is likely to be the cause of the infant's condition?

- a. Alcaptonuria**
- b. Galactosemia
- c. Albinism
- d. Cystinuria
- e. Histidinemia

806. Surfactant synthesis is impaired in premature newborns. What is its function in the lungs?

- a. Reduces the surface tension of the alveolar walls**
- b. Increases the surface tension of the alveolar walls
- c. Impairs the O<sub>2</sub> diffusion through the aerogematic barrier
- d. Facilitates diaphragmatic excursion
- e. Increases the airway resistance

807. A 3-year-old child with elevated body temperature has taken aspirin and developed increased hemolysis of erythrocytes. In this case hemolytic anemia can be caused by congenital deficiency of the following enzyme:

- a. Gamma-glutamyl transferase
- b. Glucose 6-phosphatase
- c. Glucose 6-phosphate dehydrogenase**
- d. Glycerol-phosphate dehydrogenase
- e. Glycogen phosphorylase

808. A man presents with noticeable progressive muscular dystrophy. What indicator of urinary nitrogen metabolism is characteristic of this condition?

- a. Urea
- b. Creatine**
- c. Creatinine
- d. Uric acid
- e. Ammonium salts

809. 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
- b. O<sub>2</sub>
- c. N<sub>2</sub>**



- d. NO<sub>2</sub>
- e. CO<sub>2</sub>

810. What component of a human diet cannot be digested in the gastrointestinal tract, but nevertheless is a necessary part of nutrition?

- a. Protein
- b. Starch
- c. Lipids
- d. Sucrose
- e. Cellulose**

811. A patient has been diagnosed with mixed intestinal helminthiasis. An ultra-broad spectrum anthelmintic drug was prescribed for the treatment in this case. This drug inhibits the polymerization of tubulin protein in helminths. What drug is it?

- a. Metronidazole
- b. Fluconazole
- c. Doxycycline
- d. Albendazole**
- e. Chingamine (Chloroquine)

812. 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 supramarginalis**
- b. Gyrus temporalis superior
- c. Gyrus precentralis
- d. Gyrus parietalis superior
- e. Gyrus angularis

813. Gluconeogenesis reactions use phosphoenolpyruvate formed from oxaloacetate. Oxaloacetate is synthesized by pyruvate carboxylase in mitochondria. What shuttle system transports this metabolite into the cytoplasm?

- a. Alanine shuttle system
- b. Carnitine shuttle system
- c. Glycerol phosphate shuttle system
- d. Malate shuttle system**
- e. Lactate shuttle system

814. After a week of starvation, blood glucose levels maintain stability due to the following process:

- a. Tricarboxylic acid cycle
- b. Glycolysis
- c. Glycogenolysis
- d. Gluconeogenesis**
- e. Glycogen phosphorylase

815. A 5-year-old child was brought to an admission room. The doctor determined the following signs: severe motor excitation, delirium, and hoarse voice, dilated pupils unresponsive to the light, hot and dry hyperemic skin, tachycardia, and tachypnea. These signs developed after the child had eaten belladonna berries. What pharmacological group of drugs should be prescribed in this case?

- a. Nicotinic antagonists
- b. Nicotinic agonists
- c. Cholinesterase reactivators
- d. Anticholinesterase drugs**
- e. Muscarinic agonists

816. Examination of a kidney shows that it is edematous and plethoric, its capsule can be easily removed. The cavities of the renal pelvis and calyces are expanded and filled with turbid urine, their mucosa is dull and has hemorrhagic foci. On section, the kidney tissue is variegated and has yellow-gray areas surrounded by a zone of plethora and hemorrhages. What disease corresponds with this macroscopic presentation of the kidneys?

**a. Acute pyelonephritis**

- b. Renal amyloidosis
- c. Acute glomerulonephritis
- d. Nephrolithiasis
- e. Polycystic kidney disease

817. Disturbed activity of trypsin and chymotrypsin leads to disturbed protein breakup in the small intestine. Activity of these enzymes depends on the presence of the following factor:

**a. Enterokinase**

- b. Pepsin
- c. Bile acids
- d. Hydrochloric acid
- e.  $\text{Na}^+$  salts

818. Leukotrienes belong to cellular mediators of inflammation. These bioactive substances form as a result of enzyme action. Name this enzyme:

- a. Thromboxane synthetase
- b. Cyclooxygenase 2
- c. Phospholipase A2
- d. Cyclooxygenase 1

**e. Lipoxygenase**

819. 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

820. 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. Retinol acetate**

- b. Ergocalciferol
- c. Cyanocobalamin
- d. Nicotinic acid
- e. Tocopherol acetate

821. A man was admitted to the surgical department with a diagnosis of acute pancreatitis. Conservative treatment was started. What medicine is pathogenetically justified in this case?

a. Trypsin

**b. Contrykal (Aprotinin)**

- c. Pancreatin
- d. Chymotrypsin
- e. Fibrinolysin

822. During an appointment with a doctor, a patient says that at his own discretion he takes an antiallergic medicine that significantly diminishes the signs of allergy, but causes sleepiness instead. What H1 receptor blocker does the patient take?

- a. Tavegil (Clemastine)
- b. Ranitidine
- c. Cromolyn sodium (Disodium cromoglycate)

**d. Dimedrol (Diphenhydramine)**

e. Loratadine

823. When eating food that contains gluten protein, a person can develop celiac disease (gluten

disease). The following signs are characteristic for this condition: the intestinal villi degenerate and lose their absorptive function, while the patient develops diarrhea, steatorrhea, abdominal distention, weight loss, and other extraintestinal signs. Gluten is a protein of:

- a. Eggs
- b. Corn
- c. Wheat**
- d. Wild strawberries
- e. Rice

824. A 65-year-old patient has been hospitalized with complaints of a feeling of heaviness in the subcostal regions, enlarged lymph nodes, general weakness, and headache. Examination revealed the following: hepatosplenomegaly, erythrocytes -  $2.3 \cdot 10^{12}/L$ , leukocytes -  $90 \cdot 10^9/L$ , lymphocytes - 75%, ESR - 35 mm/hour, numerous Gumprecht shadows in the smear prepared from the peripheral blood. What disease can be characterized by such a clinical presentation?

- a. Chronic lymphocytic leukemia**
- b. Iron deficiency anemia
- c. Acute lymphocytic leukemia
- d. Chronic myeloid leukemia
- e. Acute myeloid leukemia

825. A patient, who lived in a southern coastal city, developed marked vomiting and diarrhea and died of dehydration. Autopsy of the body shows acute gastroenteritis with serous-desquamative inflammation in the small intestine. What is the most likely diagnosis?

- a. Amebiasis
- b. Bacterial dysentery
- c. Cholera**
- d. Salmonellosis
- e. Typhoid fever

826. 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. Croupous pneumonia**
- b. Bronchopneumonia
- c. Tuberculosis
- d. Pneumofibrosis
- e. Interstitial pneumonia

827. A 45-year-old man has been hospitalized with complaints of fever, pain during breathing, suffocation, and cough. Laboratory tests and X-ray allowed diagnosing him with pleurisy. A pleural puncture is prescribed to evacuate the exudate. Where in the pleural cavity can you find the largest amount of exudate?

- a. Under the pleural dome
- b. Costomediastinal recess
- c. Costodiaphragmatic recess**
- d. Under the root of the lungs
- e. Phrenicomediastinal recess

828. 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. Adrenaline
- b. Caffeine
- c. Euphyllin (Aminophylline)
- d. Dobutamine**
- e. Isadrine (Isoprenaline)

829. A 56-year-old patient with heart failure has edema of feet and shins. The skin in the edematous area is pale and cold. What is the leading link of edema pathogenesis in this patient?

a. Increased hydrostatic pressure in the venules

b. Increased permeability of the capillaries

c. Positive fluid balance

d. Disturbed lymph efflux

e. Decreased oncotic pressure in the capillaries

830. A 9-year-old child became acutely ill and developed fever of  $39.5^{\circ}\text{C}$ , intoxication, petechial rash with centrally located necroses on the legs, purulent inflammation of the ocular tunics, and cardiovascular failure with a sharp drop in blood pressure. The child died. Autopsy of the body shows vasculitis with thromboses, necroses, hemorrhages, and a purulent inflammation on the skin and in the internal organs; the adrenal glands are enlarged, dark red, and have massive hemorrhages. What disease can be characterized by these signs?

a. Acute miliary tuberculosis

b. Meningococcemia with Waterhouse-Friderichsen syndrome

c. Hemorrhagic vasculitis

d. Measles

e. Scarlet fever

831. Hematologic study shows the following pattern: erythrocytes -  $2,8 \cdot 10^{12}/\text{L}$ , Hb - 80 g/L, color index - 0.85, reticulocytes - 0,1%, platelets - 160 thousand per microliter, leukocytes -  $60 \cdot 10^9/\text{L}$ . Basocytes - 2%, eosinophils - 8%, promyelocytes - 5%, myelocytes - 5%, juvenile - 16%, stab neutrophils - 20%, segmented neutrophils - 34%, lymphocytes - 5%, monocytes - 5%. This clinical presentation indicates the following blood pathology:

a. Hypoplastic anemia

b. Undifferentiated leukemia

c. Hemolytic anemia

d. Acute myeloleukemia

e. Chronic myeloleukemia

832. A patient has crystalline lens dislocation and spidery fingers. What syndrome can be diagnosed, considering that the patient also has disturbed development of connective tissue and deformed hands and feet?

a. Trisomy X

b. Turner syndrome

c. Down syndrome

d. Marfan syndrome

e. Klinefelter syndrome

833. Examination detected disturbed circulation in the patient's pancreas. What artery is likely to be damaged in this case?

a. A. lienalis

b. A. dastrica sinistra

c. A. hepatica propria

d. A. gastrica dextra

e. A. gastroepiploica dextra

834. A 63-year-old man, who has been suffering from chronic diffuse obstructive pulmonary emphysema for 15 years, died of progressive heart failure. Autopsy shows nutmeg liver cirrhosis, cyanotic induration of kidneys and spleen, ascites, and edemas of the lower limbs. What type of heart failure can be characterized by such changes in the internal organs?

a. Acute left ventricular failure

b. Acute global heart failure

c. Chronic heart failure

d. Chronic atrial failure

e. Acute right ventricular failure

835. Antigen-presenting cells play a major role in the immune response in the process of cell cooperation. What cells are antigen-presenting?

**a. Macrophages, B-lymphocytes**

- b. Helper T cells, killer T cells
- c. Natural killers: NK and K cells
- d. Helper T cells, B-lymphocytes
- e. Dendritic cells, killer T cells

836. A patient complains of red color of his urine and tears. According to his medical history, he undergoes treatment for pulmonary tuberculosis. What antituberculosis agent can cause this phenomenon?

a. Streptomycin sulfate

**b. Rifampicin**

- c. Ethambutol
- d. Ethionamide
- e. Isoniazid

837. Exo- and endotoxins, aggression enzymes play a significant role in the pathogenesis of cholera. Dehydration is the main syndrome of this disease. Which of the following pathogenetic effects is the main cause of dehydration?

- a. Hyaluronic acid destruction
- b. Membrane phospholipid defect

**c. Adenylate cyclase activation**

- d. Neuraminic acid elimination
- e. Mucin destruction

838. A patient is diagnosed with herpetic stomatitis. What should be prescribed for treatment in this case?

- a. Tetracycline
- b. Sulfacyl-sodium (Sulfacetamide)

**c. Acyclovir**

- d. Thymalin
- e. Clotrimazole

839. ECG of a woman with ischemic heart disease shows the following: heart rate - 230/min., deformed P wave, ventricular complexes remain unchanged. What heart rhythm disorder is it?

- a. Ciliary arrhythmia
- b. Atrial flutter
- c. Ventricular extrasystole

**d. Atrial paroxysmal tachycardia**

- e. Ventricular fibrillation

840. After a prolonged fasting therapy, the patient presents with decreased ratio of albumins and globulins in blood plasma. What will be the result of this changed ratio?

**a. Increased ESR**

- b. Hypercoagulability
- c. Decreased hematocrit
- d. Increased hematocrit
- e. Decreased ESR

841. It has been established that from the same amount of glucose a tumor tissue receives 20-25 times less energy than a healthy cell. This phenomenon indicates the following change in the tumor glucose metabolism:

- a. Intensified oxidative processes
- b. Intensified tissue respiration
- c. Decreased anaerobic respiration

**d. Intensified anaerobic glycolysis**

- e. Normal ratio of the processes

842. A 70-year-old man died of general emaciation. Autopsy shows yellow-brown shrunken heart and liver. Microscopy detects small brown pigment granules in the cytoplasm of cardiomyocytes and

hepatocytes near the nuclei. Their iron test is negative. What pigment is it?

- a. Bilirubin
- b. Hematoidin
- c. Lipofuscin**
- d. Hemozoin (malarial pigment)
- e. Hemosiderin

843. A 5-year-old child is diagnosed with Bruton's disease (X-linked agammaglobulinemia) that manifests itself in severe clinical course of bacterial infections and absence of B lymphocytes and plasma cells. What changes of immunoglobulin content can be observed in blood serum of the child with immunodeficiency?

- a. Decreased IgA, IgM**
- b. Increased IgD, IgE
- c. No changes
- d. Decreased IgD, IgE
- e. Increased IgA, IgM

844. Biopsy material obtained from thickened nasal mucosa of a 29-year-old woman, who has problems with nasal breathing, contains clusters of lymphocytes, plasma cells, and epithelioid cells, among which there are numerous round hyaline inclusions (Russell bodies) and large macrophages with pale cytoplasm (Mikulicz cells). What type of inflammation developed in the patient's nasal mucosa?

- a. With formation of polyps and pointed condylomas
- b. Mixed type
- c. Exudative
- d. Granulomatous**
- e. Interstitial

845. At a kindergarten, the children and the staff were examined in order to detect meningococcal carriers among them. What microbiological test is optimal for this purpose?

- a. Bacterioscopy
- b. Biological method
- c. Bacteriology**
- d. Allergy testing
- e. Serology

846. People, who live in hot climates, have reduced blood levels of a certain hormone that is important for adaptive thermoregulation. What hormone is it?

- a. Glucagon
- b. Cortisol
- c. Insulin
- d. Somatotropin
- e. Thyroxine**

847. A patient diagnosed with chronic glomerulonephritis developed persistent arterial hypertension. What group of drugs should be used for the treatment of this patient?

- a. alpha-blockers
- b. Calcium antagonists
- c. Angiotensin-converting enzyme inhibitors**
- d. Ganglionic blockers
- e. Myotropic antispasmodics

848. Mitochondrial respiratory chain contains complex cytochrome proteins. What type of reactions do they catalyze?

- a. Reactions of hydration
- b. Reactions of deamination
- c. Redox reactions**
- d. Reactions of decarboxylation

e. Reactions of transamination

849. Autopsy of the body revealed a large wedge-shaped patch of a dense dark red tissue with clear margins in the upper lobe of the right lung. Histological examination detected there necrosis of the alveolar walls; the alveolar lumen is tightly packed with erythrocytes. What process occurred in the lungs?

- a. Hemorrhage
- b. Gangrene
- c. Atelectasis
- d. Carnification

e. Hemorrhagic infarction

850. A 39-year-old man presents with hyperkeratosis, disturbed twilight vision, and high risk of infectious processes. What vitamin preparation should he be prescribed?

- a. Pyridoxine hydrochloride
- b. Tocopherol acetate
- c. Ergocalciferol
- d. Riboflavin

e. Retinol acetate

851. Thromboxanes belong to lipid bioregulators of cellular functions. What is the source, from which these compounds are synthesized?

- a. Phosphatidic acid
- b. Palmitic acid
- c. Stearic acid
- d. Palmitoleic acid

e. Arachidonic acid

852. Examination revealed that the patient has an insufficient immunoglobulin count. The likely cause of this finding is a disfunction of the following immune system cells:

- a. T-helpers
- b. T-suppressors
- c. Plasmablasts

d. Plasma cells

e. T-killers

853. Regional lymph nodes surrounding an infected wound are enlarged. Histological examination shows increased number of macrophages, lymphocytes, and lymphatic follicles in the cortical layer of the lymph nodes, as well as a large amount of plasma cells. What process in the lymph nodes is indicated by these histological changes?

- a. Acquired deficiency of lymphoid tissue
- b. Transplant rejection
- c. Congenital deficiency of lymphoid tissue

d. Antigen stimulation

e. Neoplastic aberration

854. A surgeon performs an operation on the sigmoid colon, stopping the bleeding from aa. sigmoideae. They are the branches of the following artery:

- a. A) mesenterica superior
- b. A) colica sinistra
- c. A) colica dextra

d. A) mesenterica inferior

e. Truncus coeliacus

855. A toad was given a solution of a certain chemical substance. As a result, it responds with generalized convulsions to any kind of irritation. What was the toad given in this case?

a. Dopamine

b. Strychnine

c. Acetylcholine

- d. Adrenalin
- e. Serotonin

856. With the development of medical genetics, it became possible to recover with the help of diet therapy from some hereditary diseases that were previously considered incurable. Currently, it mostly concerns the following medical condition:

- a. Achondroplasia
- b. Phenylketonuria**
- c. Color blindness
- d. Tay-Sachs disease
- e. Hemophilia

857. Autopsy of the body of a deceased person detected systemic enlargement of the lymph nodes with formation of tumor conglomerates. The spleen is enlarged and variegated on section: against the red background of the pulp, there are multiple small yellowish-white and grayish foci. What disease most likely corresponds with these changes?

- a. Lymphocytic leukemia
- b. Lung cancer
- c. Lymphogranulomatosis**
- d. Lymphosarcoma
- e. Sarcoidosis

858. When determining the blood group according to the ABO system, standard sera were used and the following results were obtained: agglutination occurred in the sera of groups I and II and did not occur in the serum of group III. What blood group is it?

- a. I (O)
- b. IV (AB)
- c. II (A)
- d. III (B)**
- e. Cannot be determined

859. After 10 days of antibiotic treatment, the patient developed signs of dysbiosis: dyspeptic phenomena, candidomycosis, jaundice, and photosensitization. It means that the patient was taking an antibiotic of the following group:

- a. Aminoglycoside group
- b. Penicillin group
- c. Cephalosporin group
- d. Tetracycline group**
- e. Rifampicin group

860. A 4-year-old child has hepatomegaly and hypoglycemia. Biochemistry detects a deficiency of glucose-6-phosphatase. What disease is likely in this case?

- a. Tay-Sachs disease
- b. Alkaptonuria
- c. Von Gierke disease**
- d. Pompe disease
- e. Phenylketonuria

861. A 19-year-old young man with depression and emotional disorders was prescribed an antidepressant, the effect of which was aimed at increasing the level of biogenic amines in the brain. The action of this antidepressant is aimed at suppressing the activity of a certain enzyme. Name this enzyme.

- a. Alanine transaminase
- b. Monoamine oxidase**
- c. Decarboxylase of cyclic amino acids
- d. Phenylalanine hydroxylase
- e. BB-type creatine phosphokinase

862. The patient's blood test shows a significant increase in the lymphocyte count. What hormone



facilitates this change?

- a. Motilin
- b. Thymosin**
- c. Tyrosine
- d. Somatostatin
- e. Neurotensin

863. For the last three days a woman has been suffering from profuse diarrhea. Her blood gas test shows reduced levels of  $\text{HCO}_3^-$ . What is the leading mechanism in compensation of acid-base imbalance in this patient?

- a. Decreased ammonia excretion with urine
- b. Decreased pulmonary ventilation
- c. -
- d. Decreased reabsorption of bicarbonate in the kidneys
- e. Increased pulmonary ventilation**

864. A patient has elevated blood pressure due to increased vascular tone. To lower the blood pressure in this case it is necessary to prescribe the blockers of:

- a. alpha- and beta-adrenoceptors
- b. Histamine H1 receptors
- c. Muscarinic acetylcholine receptors
- d. beta-adrenoceptors
- e. alpha-adrenoceptors**

865. A patient diagnosed with downward displacement of the right kidney (nephroptosis) was brought into the nephrology department. Where is the right kidney located normally in relation to the 12th rib?

- a. The 12th rib bisects the kidney in the middle
- b. The 12th rib intersects the kidney in the lower third
- c. The 12th rib intersects the kidney in the upper third**
- d. -
- e. The 12th rib can be projected on the lower renal pole

866. A 25-year-old man came to a neurologist with complaints of a weakness in his legs and disturbed gait. The doctor diagnosed him with myasthenia gravis and prescribed him proserin injections. What is the mechanism of action of this medicine?

- a. Direct-acting cholinomimetic
- b. Inhibitor of braking processes
- c. Acetylcholine synthesis activator
- d. Metabolic stimulant
- e. Anticholinesterase action**

867. A doctor prescribed an analgesic to a patient for toothache relief. This analgesic does not irritate the lining of the alimentary canal and has no ulcerogenic effect. Name this drug.

- a. Paracetamol**
- b. Ibuprofen
- c. Naproxen
- d. Phenylbutazone
- e. Acetylsalicylic acid

868. The bacteriological laboratory has received for analysis a sample of dried fish from a focus of food poisoning outbreak. The bacteriologist inoculated the sample into a Kitt-Tarozzi medium, where growth of tennis racquet-shaped microorganisms could be observed. These microorganisms are likely to be the causative agents of:

- a. Salmonellosis
- b. Staphylococcal toxicoinfection
- c. Typhoid fever
- d. Dysentery

**e. Botulism**

869. During the viroscopy of the cell monolayer infected with an infectious material, a medical laboratory scientist made the diagnosis of respiratory syncytial virus infection. What changes does this virus cause in the cell culture?

**a. Formation of multinucleated cells**

- b. Total destruction of the cell monolayer
- c. Exfoliation of the monolayer
- d. Rounded cell degeneration
- e. The presence of Babes-Negri bodies

870. As a result of physical exertion, the person's blood clotting rate became faster, because the levels of a certain hormone increased in the blood. Name this hormone.

- a. Cortisol
- b. Thyroxine
- c. Plasmins
- d. Somatotropin

**e. Adrenaline**

871. A 33-year-old man was diagnosed with gastric perforation and peritonitis, which resulted in "board-like" muscle rigidity of the anterior abdominal wall. What reflex causes this sign?

- a. Viscerovisceral reflex
- b. Cutaneovisceral reflex
- c. Somatovisceral reflex
- d. Viscerocutaneous reflex

**e. Viscerosomatic reflex**

872. A patient with pollinosis after a travel to the countryside developed edemas of lips and eyelids, lacrimation, nasal discharge, and a burning sensation in the eyes. What is the main mechanism of edema development in this case?

- a. Increased capillary hydrostatic pressure
- b. Increased interstitial oncotic pressure

**c. Increased permeability of the capillaries**

- d. Disturbed lymph efflux
- e. Increased blood oncotic pressure

873. A certain infectious agent can damage mucosa, cause inflammation of internal organs, sepsis, provoke formation of blue-green pus, and is quite resistant to most antibiotics. What pathogen is it?

**a. Pseudomonas aeruginosa**

- b. Proteus vulgaris
- c. Streptococcus mutants
- d. Staphylococcus aureus
- e. Escherichia coli

874. A 30-year-old person has been stung by a bee. The stung area exhibits edema, hyperemia, and elevated temperature. What is the initial pathogenetic factor of inflammatory edema in this case?

- a. Increase of capillary blood pressure

**b. Increase of microvascular permeability**

- c. Disturbed lymphatic efflux
- d. Decrease of oncotic blood pressure
- e. Increase of osmotic pressure in the inflammation focus

875. There is a form of rickets that is passed down through X-linked dominant inheritance. This disease affects both men and women. What type of mutation causes this disease?

- a. Genomic mutation
- b. Aneuploidy
- c. Chromosomal mutation
- d. Polyploidy

**e. Genetic mutation**

876. In a 35-year-old woman diabetes mellitus was complicated by development and progression of cataract that is likely to be caused by:

- a. Decreased oxygen affinity of the proteins
- b. NADPH2 deficiency and inhibition of fatty acid synthesis
- c. Disturbed insulin-receptor binding
- d. Cellular dehydration
- e. Glycosylation of proteins in the crystalline lens and accumulation of sorbitol**

877. In a woman with bronchial asthma, a viral infection provoked a fatal status asthmaticus. Pulmonary histology shows a spasm and an edema of bronchioles. A marked infiltration with lymphocytes, eosinophils, and other leukocytes, as well as degranulation of mast cells, can be observed in their walls. What mechanism of hypersensitivity underlies the described changes?

- a. Immune-mediated cytolysis
- b. Reaginic hypersensitivity reaction**
- c. Immune complex mechanism
- d. Inflammatory mechanism
- e. Autoimmune mechanism

878. A 60-year-old man complains of joint pain. Increased levels of C-reactive protein and oxypurine were detected in his blood serum. What disease can be characterized by these symptoms?

- a. Rheumatism**
- b. Jaundice
- c. Diabetes mellitus
- d. Hepatitis
- e. Gout

879. 24 hours after an appendectomy the patient's blood test shows neutrophilic leukocytosis with a regenerative shift. What is the most likely mechanism of absolute leukocytosis development in the patient's peripheral blood?

- a. Intensification of leukopoiesis**
- b. Decreased leukocyte disintegration
- c. Leukocyte redistribution
- d. Immunity activation
- e. Deceleration of leukocyte migration to the tissues

880. A patient with streptococcal pneumonia was prescribed an antimicrobial drug that disrupts formation of microbial shell. What drug is it?

- a. Azithromycin
- b. Erythromycin
- c. Benzylpenicillin sodium salt**
- d. Gentamycin sulfate
- e. Doxycycline hydrochloride

881. A patient was treating chronic edema syndrome with furosemide. In the process he developed disturbed cation composition of blood plasma. What should be used to correct the cation composition?

- a. Potassium chloride**
- b. Sodium chloride
- c. Lithium carbonate
- d. Calcium chloride
- e. Sodium bicarbonate

882. Microscopy of a skin biopsy material revealed granulomas consisting of epithelioid cells that were surrounded mainly by T-lymphocytes. Isolated giant multinucleated Langhans cells are located among the epithelioid cells. Some of the granulomas have areas of caseous necrosis in their center. There are no blood vessels. What disease are the described granulomas characteristic of?

- a. Tuberculosis**
- b. Rhinoscleroma

- c. Syphilis
- d. Leprosy
- e. Glanders

883. A patient presents with reduced elbow joint flexion, decreased muscle tone of the biceps brachii, and a loss of skin sensitivity on the anteriolateral surface of the forearm. What nerve is functionally impaired in this case?

- a. N. medianus
- b. N. radialis
- c. N. musculocutaneus**
- d. N. axillaris
- e. N. ulnaris

884. When a person's body adapts to being high up in the mountains, the synthesis of 2,3-diphosphoglycerate in erythrocytes increases. What is the effect of this substance?

- a. Stimulates oxidative phosphorylation
- b. Stimulates oxyhemoglobin formation
- c. Stimulates carbhemoglobin formation
- d. Stimulates oxyhemoglobin dissociation**
- e. Stimulates tissue respiration

885. A patient developed hyperchromic anemia after gastric resection. What drug must be prescribed in this case?

- a. Cyanocobalamin**
- b. Ferbitol
- c. Ferrum Lek
- d. Coamid
- e. Folic acid

886. Examination of a boy revealed that he was unable to pucker his lips into a tube. He cannot blow out a candle, the corners of his mouth do not lift during laughing, and his oral fissure stretches to the sides (transverse smile). What muscle is likely to be atrophied in this case, as indicated by these symptoms?

- a. Zygomaticus major muscle
- b. Buccinator
- c. Orbicularis oris**
- d. Masseter
- e. Risorius

887. A young man has come to the genetic consultation. He complains of abnormalities in his physical and reproductive development. Microscopy of his oral mucosa cells shows one Barr body. What karyotype is the most likely in this young man?

- a. 45, X0
- b. 47, XY, +18
- c. 47, XY, +21
- d. 47, XYY
- e. 47, XXY**

888. Autopsy of the body of a 61-year-old man with rheumatoid arthritis shows enlarged and dense yellow-white kidneys with a waxy sheen and areas of cicatricial depressions on their surface. Congo red staining reveals deposition of homogeneous pink masses in the capillary loops of the glomeruli, in the walls of the arterioles and arteries, in the basement membrane of the tubules, and in the stroma. In this case, rheumatoid arthritis was complicated by the development of the following process:

- a. Postinfectious glomerulonephritis
- b. Secondary renal amyloidosis**
- c. Acute necrotizing nephrosis
- d. Fibroplastic glomerulonephritis
- e. Rapidly progressive glomerulonephritis

889. Anaprilin (propranolol) therapy had a positive effect on the disease course in a 44-year-old woman with angina pectoris. What is the mechanism of action of this drug?

- a. Decreased myocardial oxygen demand and increased oxygen supply to the myocardium
- b. Reduction of oxidative metabolism in the myocardium due to blockade of the Krebs cycle enzymes
- c. Increased oxygen supply to the myocardium
- d. Reduction of myocardial energy consumption due to reduced load
- e. Beta-adrenergic receptor block and a decrease in myocardial oxygen demand**

890. To examine the retina, an ophthalmologist uses eye drops that cause persistent dilation of the pupil. What reflex process becomes disrupted in this case?

- a. Accommodation**
- b. Convergence of eyeballs
- c. Peripheral vision
- d. Blinking
- e. Refraction

891. An 18-year-old young man has been diagnosed with muscular dystrophy. What substance is most likely to be elevated in his blood serum in the case of this pathology?

- a. Myosin
- b. Myoglobin
- c. Alanine
- d. Lactate
- e. Creatine**

892. A patient with obliterating endarteritis underwent ganglionic sympathectomy. What type of arterial hyperemia developed as a result of the surgery in this patient?

- a. Neurotonic
- b. Neuroparalytic**
- c. Reactive
- d. Working
- e. Metabolic

893. A 45-year-old woman has breast cancer. Metastases can spread in this case to the following regional lymph nodes:

- a. Axillary, parasternal**
- b. Parasternal, bronchomediastinal
- c. Aortic, bronchomediastinal
- d. Abdominal, cervical
- e. Cervical, parasternal

894. A patient diagnosed with glaucoma was prescribed a drug that lowers the intraocular pressure. What drug is it?

- a. Noradrenaline hydrochloride
- b. Proserin (Neostigmine)**
- c. Anaprilin (Propranolol)
- d. Phenazepam
- e. Analgin (Metamizole sodium)

895. The pentose phosphate pathway of glucose oxidation is of physiological significance for the synthesis of DNA and RNA nucleotides and some coenzymes, because it provides the following:

- a. Ribose-5-phosphate**
- b. Fructose-1-phosphate
- c. Galactose-1-phosphate
- d. Glycerol-3-phosphate
- e. Phosphoenolpyruvate

896. A patient with COVID-19 presents with increased production of proteins that suppress translation in the infected cells by inducing the synthesis of protein kinases that phosphorylate eIF2 initiation factors. Name these proteins.

- a. Integrins
- b. Albumins
- c. Interleukins
- d. Interferons**
- e. Proteases

897. A patient with chronic purulent osteomyelitis died of chronic kidney failure. Autopsy of the body revealed large, dense, white-yellow kidneys with a greasy sheen on section. What is the most likely diagnosis in this case?

- a. Acute necrotizing nephrosis
- b. Septic nephritis
- c. Subacute glomerulonephritis
- d. Renal amyloidosis**
- e. Chronic glomerulonephritis

898. What type of ventilatory failure is characteristic of pneumothorax?

- a. Pathologic
- b. Restrictive**
- c. Obstructive
- d. Disregulatory
- e. Mixed

899. A patient has acute heart failure with myocardial unresponsiveness to cardiac glycosides. What drug should be prescribed for the treatment of acute heart failure in this case?

- a. Reserpine
- b. Atropine sulfate
- c. Dobutamine**
- d. Strophanthin
- e. Corglycon

900. A biopsy material obtained from the bronchial mucosa of a 50-year-old patient with a 20-year-long history of chronic bronchitis revealed thinning of the mucosa, cyst-like transformation of the mucous glands, and foci, where prismatic epithelium was replaced with stratified squamous epithelium. What pathological process is most likely in this case?

- a. Heteroplasia
- b. Heterotopia
- c. Dysplasia
- d. Metaplasia**
- e. Hyperplasia

901. A patient with diabetes mellitus after an insulin injection lost his consciousness and developed convulsions. What will be the result of a biochemical test for blood glucose level in this case?

- a. 2.5 mmol/L**
- b. 5.5 mmol/L
- c. 3.3 mmol/L
- d. 8.0 mmol/L
- e. 10 mmol/L

902. After eating fatty foods, the patient develops nausea, heartburn, and steatorrhea. What is the likely cause of this condition?

- a. Bile acid deficiency**
- b. Disturbed trypsin synthesis
- c. Disturbed phospholipase synthesis
- d. Amylase deficiency
- e. Increased lipase production

903. Abdominal cavity revision detected a venous bleeding from the hepatoduodenal ligament. What vein is damaged?

- a. Inferior mesenteric vein

- b. Superior mesenteric vein
- c. Inferior vena cava
- d. Splenic vein

**e. Hepatic portal vein**

904. In a patient with hypochromic anemia, erythrocytes contain 45% of HbS and 55% of HbA1. What type of anemia is it?

- a. alpha-thalassemia
- b. Sickle cell anemia**
- c. Addison-Biermer disease
- d. Microspherocytic anemia
- e. Glucose-6-phosphate dehydrogenase deficiency anemia

905. Autopsy of the fetus revealed an epidural hematoma caused by the rupture of the falciform sinus and cerebellar tentorium. Such injury can result from a pathology occurring during the following developmental stage:

- a. Antenatal
- b. Progenesis

**c. Intranatal**

- d. Perinatal
- e. Postnatal

906. A patient is diagnosed with an acute necrotizing pancreatitis. What peritoneal cavity will be immediately exposed to exudate?

- a. Bursa subhepatica
- b. Canalis lateralis sinister
- c. Bursa pregastrica
- d. Canalis lateralis dexter

**e. Bursa omentalis**

907. Domestic accident has resulted in a significant blood loss in the patient, which was accompanied by a drop in blood pressure. What hormones ensure quick restoration of the blood pressure caused by a blood loss?

- a. Aldosterone
- b. Oxytocin
- c. Cortisol
- d. Adrenaline, vasopressin**
- e. Reproductive hormones

908. A 14-year-old adolescent has diphtheria. During the peak of the disease against the background of acute drop in body temperature and tachycardia the blood pressure is 70/50 mm Hg. What type of vascular tone disturbance is it?

- a. Acute hypotension**
- b. Chronic hypotension
- c. Essential hypotension
- d. -
- e. Somatoform autonomic dysfunction

909. During childbirth, the woman developed secondary weakness of labor activity. What drug must be administered in this case to restore the contractile activity of the myometrium?

- a. Suxamethonium
- b. Dimedrol (Diphenhydramine)
- c. Oxytocin**
- d. Unithiol
- e. Chlorpromazine

910. A patient with chronic tonsillitis has developed a complication - a retropharyngeal abscess. Into what structure can the infection spread from the retropharyngeal (retrovisceral) space?

**a. Thoracic cavity, posterior mediastinum**

- b. Suprasternal interaponeurotic space
- c. Thoracic cavity, middle mediastinum
- d. Previsceral space
- e. Thoracic cavity, anterior mediastinum

911. A patient has been diagnosed with atrophy of masticatory muscles. This group of muscles is innervated by branches of the following cranial nerve:

- a. First branch of the trigeminal nerve
- b. Hypoglossal nerve
- c. Second branch of the trigeminal nerve
- d. Motor branches of the VII cranial nerve
- e. Third branch of the trigeminal nerve**

912. A 50-year-old patient complaining of weight loss and weakness presents with hypoglycemia and hyperinsulinemia in the blood. An additional examination detected a tumor of the islets of Langerhans. What cell atypism causes increased insulin synthesis in this case?

- a. Functional**
- b. Immunological
- c. Physical and chemical
- d. Morphological
- e. Biochemical

913. A patient presents with an inner ear inflammation. On examination the doctor states that the 1st neurons of the auditory analyzer are affected. Where are these neurons located?

- a. G. geniculi
- b. G. vestibulare
- c. G. spirale**
- d. G. ciliare
- e. G. trigeminale

914. A patient has telangiectasia and ataxia. Blood tests show reduced T lymphocyte count, absence of IgA, decreased levels of IgG and IgM. What syndrome is it characteristic of?

- a. Klinefelter syndrome
- b. Down syndrome
- c. Louis-Barr syndrome**
- d. Wiskott-Aldrich syndrome
- e. Turner syndrome

915. In an experiment after a prolonged electrical stimulation of the peripheral n.vagus a brief cardiac arrest occurred in the subject. What ion mechanisms in the cardiac cells cause this effect?

- a. Increased  $\text{Ca}^{2+}$  influx
- b. Increased  $\text{K}^{+}$  efflux**
- c. Increased  $\text{Na}^{+}$  influx
- d. Decreased  $\text{Na}^{+}$  influx
- e. Decreased  $\text{K}^{+}$  efflux

916. A patient with peptic ulcer disease was prescribed famotidine. As a result his gastric juice acidity significantly decreased. What is the mechanism of action of this drug?

- a. Inhibition of  $\text{H}^{+}$ ,  $\text{K}^{+}$ -ATPase activity
- b. Histamine H1 receptor blockade
- c. Blockade of histamine receptors in the sympathetic ganglia
- d. Muscarinic M1 receptor blockade
- e. Histamine H2 receptor blockade**

917. Serological diagnostics of infectious diseases is based on the specific interaction between antibodies and antigens. Name the serological reaction, where highly dispersed antigens are adsorbed on erythrocytes.

- a. Indirect (passive) hemagglutination reaction**
- b. Precipitation reaction



- c. Hemadsorption reaction
- d. Complement fixation reaction
- e. Neutralization reaction

918. A person developed increased pulmonary ventilation due to physical exertion. What indicator of external respiration will be significantly increased compared to the resting state?

- a. Respiratory volume**
- b. Total lung capacity
- c. Expiratory reserve volume
- d. Vital lung capacity
- e. Inspiratory reserve volume

919. An infectionist has detected an acute enterocolitis syndrome with impaired processes of digestion and absorption of breakdown products in the patient. What cells of the intestinal epithelium are damaged, resulting in such disorders?

- a. Endocrine cells
- b. Goblet cells
- c. Columnar cells without a border
- d. Apically granular cells
- e. Columnar cells with a border**

920. Healthy parents gave birth to a son with phenylketonuria. The child presents with normal development due to a special diet. What type of variability is associated with the convalescence of this child?

- a. Mutational variability
- b. Genotypic variability
- c. Modification variability**
- d. Combinative variability
- e. Somatic variability

921. A patient with severe poisoning caused by an unknown substance was brought into the intensive care unit. What drug should be used to induce forced diuresis in the patient?

- a. Hydrochlorothiazide
- b. Spironolactone
- c. Acetazolamide
- d. Triamterene
- e. Furosemide**

922. Trauma of peripheral nerves leads to muscle atrophy, bones become porous and brittle, ulcers develop on the skin and mucosa. What function of the nervous system is affected in such cases?

- a. Higher nervous activity
- b. Motor
- c. Vegetative
- d. Trophic**
- e. Sensory

923. In case of inflammation, local anesthetic effect of novocaine decreases in strength. What process in the inflammation focus leads to disturbed hydrolysis of novocaine salt and therefore disturbed release of active anesthetic base?

- a. Local tissue acidosis**
- b. Local tissue alkalosis
- c. Inhibition of oxidative phosphorylation
- d. Inhibition of carbonic anhydrase
- e. Activation of succinate dehydrogenase

924. 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. Elastic cartilage, endothelium

c. Dense connective tissue, endothelium

d. Hyaline cartilage, endothelium

e. Cardiac muscle tissue, endothelium

925. As a result of a fall from a height, a man has suffered a femoral fracture. What drug should be prescribed for pain relief in this case?

a. Morphine hydrochloride

b. Acetylsalicylic acid

c. Pentamine (Azamethonium bromide)

d. Paracetamol

e. Dimedrol (Diphenhydramine)

926. During examination by a pediatrician, multiple petechiae were detected on the skin of a 10-year-old child. The child has bleeding gums and low levels of vitamin C in urine. What process is impaired in this case?

a. Collagen breakdown

b. Proteoglycan synthesis

c. Activation of hyaluronidase

d. Proteoglycan breakdown

e. Collagen synthesis

927. A 23-year-old woman develops attacks of paroxysmal cough when the air temperature drops below 0°C. What receptors are being stimulated in this case, causing these attacks?

a. Central chemoreceptors

b. Pulmonary stretch receptors

c. Peripheral chemoreceptors

d. Juxtaalveolar receptors

e. Irritant receptors

928. An electronic microphotograph of the myocardium shows appendaged cells with few organelles. These cells have secretory granules and well-developed endoplasmic reticulum. Name these cells:

a. His bundle cells

b. Pacemaker cells

c. Ventricular cardiomyocytes

d. Transitional atypical cells

e. Secretory cardiomyocytes

929. A patient with a tumor in his large intestine complains of abdominal pain, feces with blood, general weakness. In blood: hemoglobin - 97 mmol/L, erythrocytes -  $2.8 \cdot 10^{12}/L$ , color index - 0.66, microcytosis, poikilocytosis, moderate number of polychromatocytes. What type of anemia is it?

a. Hyperchromic anemia

b. Hypochromic anemia

c. Hyperregenerative anemia

d. Megaloblastic anemia

e. Aregenerative anemia

930. Inhibiting effect of GABA is based on increased permeability of postsynaptic membrane to chloride ions. This mediator forms in the result of decarboxylation of:

a. Asparagine

b. Glutamine

c. Glutamate

d. Aspartate

e. Arginine

931. 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. Maxillary branch of the trigeminal nerve

b. Mandibular branch of the trigeminal nerve

- c. Greater petrosal nerve branching from the facial nerve
- d. Ophthalmic branch of the trigeminal nerve
- e. Chorda tympani branching from the facial nerve

932. Decarboxylase activity leads to formation of biogenic amines. What biogenic amine triggers the multistage mechanism that regulates the HCl secretion in the stomach?

- a. GABA
- b. Histamine**
- c. Dopamine
- d. Glutamine
- e. Serotonin

933. Two weeks after a blood transfusion, the recipient developed a fever. What protozoan disease can the doctor suspect in this case?

- a. Leishmaniasis
- b. Malaria**
- c. Amoebiasis
- d. Trypanosomosis
- e. Toxoplasmosis

934. A patient diagnosed with diabetes mellitus presents with increased levels of ketone bodies in the blood. From what compound are ketone bodies synthesized?

- a. Acyl-CoA
- b. Butyryl-CoA
- c. Succinyl-CoA
- d. Oxyacyl-CoA
- e. Acetyl-CoA**

935. Autopsy of the body of a 62-year-old man shows a supraventricular aortic rupture with cardiac tamponade. Histology of the ascending aorta detected infiltrations of lymphoid, plasma, and epithelioid cells in its tunica externa and tunica media, while there are necrotic foci in the tunica media, and proliferation of adventitial cells, endotheliocytes, and vessels in the tunica externa. Such changes in the aorta are characteristic of:

- a. Rheumatic aortitis
- b. Syphilitic aortitis**
- c. Essential hypertension
- d. Septic aortitis
- e. Atherosclerosis

936. After a recovery from meningoencephalitis, the patient presents with some residual signs, such as facial nerve damage on the right. What group of muscles will be affected because of this pathology?

- a. Suprahyoid muscles
- b. Mimic muscles**
- c. Strap muscles
- d. Deep muscles of the neck
- e. Masticatory muscles

937. A 30-year-old woman was using a fluorescent lipstick for a long time. She developed limited erythema and slight peeling on the border of her lips. Later her lips developed small transversal grooves and fissures. Specialized microscopy technique detected sensitized lymphocytes and macrophages and signs of cytolysis in the connective tissue of the affected area. What type of immunological hypersensitivity developed in the patient's lips?

- a. Type I (reagine type)
- b. Type III (immune complex-mediated cytotoxicity)
- c. Granulomatosis
- d. Type II (antibody-mediated cytotoxicity)
- e. Type IV (cell-mediated cytotoxicity)**

938. A patient presents with absence of T-lymphocytes, facial defects, defects of thyroid and parathyroid glands, heart disease. Cellular immune responses do not develop. The patient was diagnosed with DiGeorge syndrome. This syndrome is caused by:

- a. Thymus hyperplasia
- b. Thymus hypoplasia**
- c. Combined immunodeficiency
- d. Primary T cell deficiency
- e. Primary B cell deficiency

939. A 45-year-old man was diagnosed with acute psychosis and underwent therapy for a month. The patient's condition improved, but he developed muscle rigidity, hand tremor, and hypokinesia. What medicine causes such side effects?

- a. Aminazine (Chlorpromazine)**
- b. Chlordiazepoxide
- c. Diphenine (Phenytoin)
- d. Diazepam
- e. Sydnocarb (Mesocarb)

940. What cells of the renal endocrine complex are located under the endothelium in the walls of afferent and efferent arterioles and contain renin granules in their cytoplasm, which contributes to an increase in the blood pressure?

- a. Juxtaglomerular cells**
- b. Macula densa cells
- c. Mesangial cells
- d. Juxtavascular cells
- e. Interstitial cells

941. Biotin plays an important role in the metabolism of carbohydrates and lipids. In what type of reactions does it take part?

- a. Hydroxylation
- b. Decarboxylation
- c. Deamination
- d. Carboxylation**
- e. Transamination

942. A person has a wound in the abdomen in the right. What part of the colon is most likely to be damaged?

- a. Transverse colon
- b. Rectum
- c. Ascending colon**
- d. Descending colon
- e. Sigmoid colon

943. A 45-year-old man with acute pneumonia has developed pulmonary edema on the 6th day of illness, which resulted in his death. Autopsy shows that the entire upper lobe of the right lung is affected. This lobe is enlarged, dense, and gray on section. It has fibrinous deposits on the pleura. A cloudy liquid flows from the section surface. Microscopy shows fibrin, neutrophils, macrophages, and hemolyzed erythrocytes in the lumen of the alveoli. What type of pneumonia is the patient present with?

- a. Adult respiratory distress syndrome
- b. Staphylococcal bronchopneumonia
- c. Croupous pneumonia**
- d. Viral pneumonia
- e. Hypostatic pneumonia

944. An inflammation can be characterized by hemocapillary dilation in the affected area, decreased blood circulation, and increased vessel wall permeability. What cells play the key role in this process?

- a. Plasma cells

b. Fibroblasts

**c. Tissue basophils**

d. Macrophages

e. Eosinophils

945. Autopsy of the patient, who died of diffuse peritonitis, shows numerous small oval ulcers located along the intestine in the distal portion of the small intestine. Ulcer floor is clear and smooth, formed by muscular or serous layer. Ulcer margins are even and rounded. Two of the ulcers are perforated, with perforations up to 0.5 cm in diameter. What disease can be suspected?

**a. Typhoid fever**

b. Dysentery

c. Tuberculosis

d. Typhus

e. Cholera

946. A 40-year-old woman on examination presents with intensified basal metabolic rate. What hormone present in excess leads to such a condition?

a. Glucagon

b. Thyrocalcitonin

c. Aldosterone

d. Somatostatin

**e. Triiodothyronine**

947. Electronic microphotograph of a renal corpuscle shows certain cells with processes between the capillaries of the vascular glomerulus. There is a large number of filaments in their cytoplasm. Name these cells:

a. Juxtaglomerular

b. Juxtavascular

c. Fibroblasts

**d. Mesangial**

e. Adventitial

948. A patient with tuberculosis was prescribed an antibiotic. When taking this drug, the patient can develop liver function disorders, leukopenia, and red color of biological fluids. What drug was prescribed in this case?

**a. Rifampicin**

b. Isoniazid

c. Cycloserine

d. Pyrazinamide

e. Sodium para-aminosalicylate

949. A patient developed immune hemolytic anemia. What substance will be present in an increased concentration in the patient's blood serum?

a. Protoporphyrin

b. Mesobilinogen

**c. Indirect bilirubin**

d. Direct bilirubin

e. Stercobilinogen

950. Autopsy of the body of a 67-year-old man shows acutely swollen and dull rectosigmoid mucosa in his large intestine. The mucosa there has multiple erosions and ulcers, as well as single polyps. Histologically, the mucosa has acute infiltrations consisting of lymphocytes, plasma cells, neutrophilic granulocytes, and eosinophils, which are located mainly in the lumina of the crypts (crypt abscesses). The intestinal wall is sclerotic and there are proliferations of granulation tissue that form polyps. What is the most likely diagnosis?

a. Typhoid fever

b. Dysentery

c. Acute ulcerative colitis

d. Exacerbation of nonspecific ulcerative colitis

e. Crohn disease

951. A patient with bronchial asthma developed acute respiratory insufficiency. What type of respiratory insufficiency develops in such cases?

a. Perfusion insufficiency

b. Dysregulatory disturbance of alveolar ventilation

c. Diffuse insufficiency

d. Restrictive disturbance of alveolar ventilation

e. Obstructive disturbance of alveolar ventilation

952. After a maxillofacial injury, a 40-year-old man developed a disfunction of the sublingual and submandibular glands on the left. Hyposalivation is observed in the affected glands. What nerve does not function properly in this case?

a. Cranial nerve VI

b. Cranial nerve XII

c. Cranial nerve VII

d. Cranial nerve X

e. Cranial nerve XI

953. A 70-year-old man presents with atherosclerosis that was complicated by leg thrombosis. He developed a gangrene in the toes of his left foot. The onset of thrombus formation is most likely associated with:

a. Adhesion of platelets

b. Decreased heparin synthesis

c. Prothrombin to thrombin conversion

d. Fibrinogen to fibrin conversion

e. Prothrombinase activation

954. 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. -

c. Artificial active

d. Natural active

e. Artificial passive

955. The only indication for narcotic analgesics (morphine, trimeperidine) is acute intense pain that is life-threatening for the patient. Why does this group of drugs have such limited indications for practical use?

a. Potentiation

b. Cumulation

c. Drug addiction

d. Hypersensitivity

e. Sensitization

956. A 30-year-old woman developed facial edemas. Examination detected proteinuria (5.87 g/L), hypoproteinemia, dysproteinemia, and hyperlipidemia. Such combination of signs is characteristic of:

a. Acute kidney failure

b. Nephrotic syndrome

c. Nephritic syndrome

d. Chronic pyelonephritis

e. Chronic kidney failure

957. Medical examination detected angina pectoris in a patient. The doctor prescribed the patient metoprolol that reduces the strength and frequency of cardiac contractions and, as a result, reduces the myocardial oxygen demand. What is the mechanism of the therapeutic action of this drug?

a. Blockade of muscarinic acetylcholine receptors

**b. Blockade of beta\_1-adrenergic receptors**

- c. Blockade of beta\_2-adrenergic receptors
- d. Blockade of nicotinic acetylcholine receptors
- e. Stimulation of beta\_1-adrenergic receptors

958. A sample of the discharge from the affected pharyngeal mucosa was obtained from a sick child, provisionally diagnosed with diphtheria. A smear was prepared and stained. Microscopy detected there yellow bacilli with dark-blue thickened ends. What structural element of a microbial cell was detected in the obtained microorganisms?

- a. Flagella
- b. Spores

**c. Volutin granules**

- d. Plasmids
- e. Capsule

959. A man presents with decreased blood pH, low levels of bicarbonate ions (a drop in the blood alkaline reserve), and increased blood and urine levels of lactic and pyruvic acids. What type of acid-base imbalance is it?

- a. Metabolic alkalosis
- b. Respiratory alkalosis
- c. Mixed alkalosis
- d. Respiratory acidosis

**e. Metabolic acidosis**

960. The spleen is known to be a "graveyard of erythrocytes". What happens to the erythrocytes of the red pulp, when they die?

- a. Accumulate in the red pulp
- b. Become absorbed by neutrophilic leukocytes
- c. Undergo lysis by the enzymes of foreign-body giant cells

**d. Become absorbed by macrophages**

- e. Enter the bloodstream

961. A 22-year-old patient diagnosed with acute diphtheritic myocarditis developed clinical signs of cardiogenic shock. What is the leading pathogenetic mechanism in the development of this type of shock?

**a. Impaired pumping function of the heart**

- b. Decreased diastolic blood flow to the heart
- c. Decreased vascular tone
- d. Blood deposition in the veins
- e. Increased vascular tone

962. Fibrogastroscopy of a 48-year-old man, a driver, with complaints of epigastric pain after eating shows hyperemic gastric mucosa with reduced folds. In the gastrobiopsy specimen, microscopy detects thinned mucosa, reduced number of glands, and proliferation of connective tissue infiltrated by lymphocytes and plasma cells. Make a diagnosis.

- a. Giant hypertrophic gastritis
- b. Chronic superficial gastritis

**c. Chronic atrophic gastritis**

- d. Acute purulent gastritis
- e. Acute catarrhal gastritis

963. Mucous tunics of the human body often produce an enzyme that causes lysis of bacteria. This enzyme is present in tears, saliva, and gastrointestinal mucus. Name this enzyme:

- a. Hyaluronidase

**b. Lysozyme**

- c. Complement
- d. Opsonin
- e. Fibrinolysin

964. During a surgery, curare-like drugs are used to induce myorelaxation in the patient. What is the mechanism of their action?

- a. Blockade of noradrenaline release from the presynaptic compartment
- b. Blockade of muscarinic cholinergic receptors in smooth muscles
- c. Blockade of nicotinic cholinergic receptors in skeletal muscles**
- d. Blockade of acetylcholine release from the presynaptic compartment
- e. Blockade of excitation conduction through nerve fibers

965. A 1.5-year-old child was diagnosed with immunodeficiency. B lymphocyte count is normal, but they are functionally inactive. What immune defense factor is absent in the child's oral cavity?

- a. Lactoperoxidase system
- b. Secretory immunoglobulin A**
- c. Interferon
- d. Lysozyme
- e. Fibronectin

966. On the second year of his life a boy started developing frequent respiratory diseases and ulcerative skin lesions. It was determined that immunoglobulins of all classes are practically absent in the child's blood. The described syndrome is based on decreased functional activity of a certain cell population. Name this cell population:

- a. B lymphocytes**
- b. T lymphocytes
- c. Macrophages
- d. NK cells
- e. Neutrophils

967. A patient has been diagnosed with mitral valve stenosis. What pathogenetic type of heart failure is it?

- a. Mixed form of heart failure
- b. Volume overload-induced heart failure
- c. Heart failure due to myocardial damage
- d. Pressure overload-induced heart failure**
- e. Heart failure due to myocardial hypertrophy

968. After an industrial accident, a man was exposed to potassium cyanide, which resulted in cytochrome oxidase blockade in this man. What pathological process can be observed in the patient in this case?

- a. Circulatory hypoxia
- b. Hemic hypoxia
- c. Tissue hypoxia**
- d. Respiratory hypoxia
- e. Hypoxic hypoxia

969. What hormone stimulates the secretion of lipolytic and proteolytic enzymes by pancreatic cells?

- a. Cholecystokinin-pancreozymin (CCK-PZ)**
- b. Aldosterone
- c. Somatostatin
- d. Secretin
- e. Bombesin

970. Mother of a 10-year-old boy with suppurative gingivitis brought her child to the dentist. She asks if her child can be given fluoroquinolones to treat his condition. The doctor's answer was negative due to the fact that fluoroquinolones:

- a. Facilitate calcium loss in teeth and bones
- b. Cauterize mucous membranes
- c. Damage cartilage tissue in children**
- d. Damage dentin
- e. Provoke gingival hemorrhages



971. During the generation of action potential in the nerve fiber of a living cell, ATP energy is used for:

- a. Restoration of ionic asymmetry
- b. Inactivation of potassium channels
- c. Inactivation of sodium channels
- d. Activation of sodium channels
- e. Activation of potassium channels

972. The biopsy material obtained from the enlarged lymph node of a patient with a subfebrile temperature contains numerous granulomas with caseous necrosis in the center. The areas of necrosis are surrounded by epithelioid cells, Langhans giant multinucleated cells, and lymphocytes. What disease can be characterized by these pathohistological changes?

- a. Lymphosarcoma
- b. Lymphogranulomatosis
- c. Tuberculosis
- d. Lymphocytic leukemia
- e. -

973. Autopsy of a 30-year-old man shows enlarged spleen (weight - 900.0 g), enlarged liver (weight - 4000.0 g), and enlarged lymph nodes. Bone marrow of the femoral shaft is bright red and moist. Microscopically in the liver there are thick infiltrates located mostly along the portal tract. The infiltrates consist of juvenile hemopoietic cells with round nuclei and thin layer of cytoplasm. What disease can be suspected?

- a. Chronic myeloid leukemia
- b. Acute myeloblastic leukemia
- c. Chronic lymphocytic leukemia
- d. Acute lymphoblastic leukemia
- e. Generalized lymphogranulomatosis

974. A patient for a long time was on an imbalanced diet low in proteins, which resulted in hepatic fatty infiltration. This condition is likely to develop if a certain substance is absent in a person's diet. Name this substance:

- a. Methionine
- b. Biotin
- c. Alanine
- d. Acetic acid
- e. Cholesterol

975. A patient diagnosed with polyneuropathy was prescribed vitamin B<sub>1</sub>. Name the coenzyme form of this vitamin:

- a. Flavin adenine mononucleotide
- b. Pyridoxal phosphate
- c. Thiamine diphosphate
- d. Tetrahydrofolate
- e. Nicotinamide adenine dinucleotide phosphate

976. 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. Potassium channels
- b. Calcium channels
- c. Chlorine channels
- d. Hydrogen channels
- e. Sodium channels

977. Tubocurarine chloride was used during dislocation reduction in a patient. Soon the patient developed overdose symptoms. What drug should be used to eliminate these symptoms?

- a. Dithylin (Suxamethonium)
- b. Omeprazole

c. Prozerin (Neostigmine)

d. Morphine

e. Furosemide

978. A patient, who lives in a specific geochemical territory, was diagnosed with endemic goiter. What type of post-translational modification of thyroglobulin is disturbed in this patient?

a. Phosphorylation

b. Acetylation

c. Methylation

d. Iodination

e. Glycosylation

979. Hemoglobin of an adult person (HbA1) is a tetrameric protein, consisting of two alpha- and two beta-peptide chains. Such protein structure is called:

a. Primary

b. -

c. Quaternary

d. Secondary

e. Tertiary

980. A 45-year-old man complains of a plaque-like formation on his neck. Histology of the skin biopsy material detected clusters of round and oval tumor cells with thin layer of basophilic cytoplasm. These cells resemble the cells of basal layer of epidermis. Specify the name of this tumor:

a. Syringoadenoma

b. Trichoepithelioma

c. Epidermal carcinoma

d. Basal cell carcinoma

e. Hidradenoma

981. Bacteriology of purulent secretions from the patient's urethra reveals bacteria that stain negatively, when the Gram technique is used, resemble coffee beans, and break down glucose to acid. The bacteria are located in leukocytes. What disease can be caused by these pathogens?

a. Candidiasis

b. Gonorrhea

c. Melioidosis

d. Syphilis

e. Lymphogranuloma venereum

982. A family has two children. The younger child is under a year. The child has developed spastic cough attacks. Similar clinical presentation was observed in the elder preschool child one month ago. The doctor suspects pertussis infection. What method enables retrospective diagnostics of this disease?

a. Microscopy

b. Serological

c. Molecular biological

d. Biological

e. Bacteriological

983. Before surgery, a patient with a hepatic disorder was prescribed a drug that activates the synthesis of blood coagulation factors and is a synthetic water-soluble analogue of a certain vitamin. Name this drug.

a. Neostigmine

b. Heparin

c. Validol (Menthyl isovalerate)

d. Neodicumarin

e. Menadione

984. A patient is in a state of anaphylactic shock. What drug should be used for urgent treatment of this condition?

- a. Noradrenaline hydrogen tartrate
- b. Fenoterol
- c. Adrenaline hydrochloride**
- d. Phenylephrine
- e. Salbutamol

985. A bacteriological laboratory studied canned meat that caused a severe toxicoinfection. Microscopy of the culture grown on Kitt-Tarozzi medium shows Gram-positive spore-forming bacilli that resemble a tennis racket. What diagnosis will be made by the doctor?

- a. Clamidosis
- b. Botulism**
- c. Tularemia
- d. Typhoid fever
- e. Dysentery

986. When studying an isolated excitatory cell, it was determined that the cell's threshold stimulation force had significantly decreased. What could have caused it?

- a. Inactivation of membrane calcium channels
- b. Activation of membrane sodium channels**
- c. Blockade of energy production in the cell
- d. Activation of membrane potassium channels
- e. Inactivation of membrane sodium channels

987. All nonsteroidal anti-inflammatory drugs can damage the gastric mucosa. To find the substances that do not cause this complication, it is necessary to know what it is associated with. To reduce the severity of this complication, the drug's effect on a certain molecular substrate must be reduced. Name this molecular substrate.

- a. Lysosomal enzymes
- b. Cyclooxygenase-2
- c. Cyclooxygenase-1**
- d. Adenylate cyclase
- e. Kallikrein

988. In a patient, the duration of the PQ interval in the ECG exceeds the norm, while the duration of the P wave remains normal. This phenomenon is caused by a decreased speed of excitation conduction in a certain structure. Name this structure.

- a. Atrioventricular node**
- b. Sinoatrial node
- c. His' bundle
- d. Purkinje fibers
- e. His' bundle branches

989. People, who live in mountainous areas, have an increased erythrocyte count in blood, which may be caused by an increase in production of the following in the kidneys:

- a. Vitamin D<sub>3</sub>
- b. Urokinase
- c. Erythropoietin**
- d. Renin
- e. Prostaglandins

990. Autopsy of the body a 40-year-old man detected a dense subpleural area 1.5 cm in diameter with clear borders in the third segment of the right lung. The affected area is surrounded with whitish fibrous tissue and has crumbling white-yellow areas on section. What can be characterized by the presence of such a lesion focus?

- a. Organizing pulmonary infarction
- b. Encapsulated primary affect**
- c. Chondroma
- d. Fibroma

e. Peripheral cancer

991. A 49-year-old woman had a long history of chronic glomerulonephritis, of which she died. Autopsy shows that her kidneys are 7x3x2.5 cm in size, have weight of 65.0 g, are dense and finely granular. Fibrinous inflammation of serous and mucous tunics, dystrophic degeneration of parenchymal organs, and cerebral edema were detected as well. What complication caused such changes in the serous tunics and internal organs?

- a. Anemia
- b. DIC syndrome
- c. Sepsis
- d. Thrombocytopenia
- e. Uremia**

992. In an experiment on a dog, the structure of the central parts of the auditory sensory system was being studied. As a result of the destruction of one of the brain structures, the animal has lost its orienting reflex towards acoustic stimuli. What structure was destroyed?

- a. Superior colliculi of the corpora quadrigemina
- b. Inferior colliculi of the corpora quadrigemina**
- c. Red nuclei
- d. Medial geniculate nuclei
- e. Lateral geniculate nuclei

993. A man was taking large doses of sulfonamides for a long time. Recently, he has developed significant dyspnea at rest, weakness, loss of appetite, and disturbed sleep. Laboratory blood test detects methemoglobin in his blood. What mechanism of hemoglobin inactivation in erythrocytes is observed in this patient?

- a. Damage of protein in hemoglobin
- b. Blockade of reducing enzyme systems
- c. Combination of hemoglobin with sulfonamides
- d. Oxidation of iron in hemoglobin**
- e. Blockade of oxidative enzyme systems

994. Autopsy of a 60-year-old woman, who for a long time had been suffering from essential hypertension, shows significantly diminished kidneys (weight of both kidneys is 80 g) with finely granular surface. Uniform renal cortical thinning can be observed on section. Name the described changes in the kidneys:

- a. Secondary contracted kidney
- b. Pyelonephritic contracted kidney
- c. Diabetic nephrosclerosis
- d. Amyloid contracted kidney
- e. Primary contracted kidney**

995. In chromosomal disorders, to study the karyotype, the cell culture during mitosis is processed with colchicine. This substance blocks contractions of the fibers that form mitotic spindle. At what stage will the mitosis be interrupted?

- a. Telophase
- b. Metaphase**
- c. Prophase
- d. Anaphase
- e. Interphase

996. A doctor measures the external dimensions of the pelvis and determines the distance between the greater femoral trochanters. What dimension is being measured by the doctor?

- a. Distantia intercristalis
- b. Distantia interspinosa
- c. Distantia intertrochanterica**
- d. Diameter oblique
- e. Conjugata externa

997. A patient has an injury of the radiocarpal joint. What bones of the proximal row of the wrist (except the pisiform bone) form this joint?

- a. Scaphoid, trapezoid, hamate
- b. Trapezoid, hamate, lunate
- c. -
- d. Scaphoid, lunate, triquetral**
- e. Scaphoid, trapezoid, lunate

998. The laboratory has received a sample of digestive juice for analysis. Its pH is 2.2. Name this digestive juice:

- a. Pancreatic juice
- b. Gastric juice**
- c. Saliva
- d. Intestinal juice
- e. Bile

999. Excessive formation of free radicals leads to cell damage. Name the non-enzymatic factor of the cellular antioxidant defense system.

- a. Superoxide dismutase
- b. Glutathione reductase
- c. Glucuronidase
- d. Vitamin E**
- e. Cyanocobalamin

1000. The surgeon noticed aggregated lymphoid nodules (Peyer's patches) on the intestinal mucosa. What portion of the intestine is it?

- a. Jejunum
- b. Duodenum
- c. Cecum
- d. Ileum**
- e. Rectum

1001. A young man provisionally diagnosed with Klinefelter syndrome came to a genetic consultancy. What genetic method can be used to confirm the diagnosis?

- a. Genealogy
- b. Biochemistry
- c. Twin study
- d. Cytogenetics**
- e. Population statistics

1002. A study of residual nitrogen shows that urea nitrogen is significantly reduced. What organ is affected, as indicated by this characteristic?

- a. Heart
- b. Stomach
- c. Intestine
- d. Liver**
- e. Brain

1003. An extrasystole caused by excitation in one of the ventricles leads to:

- a. Prolonged compensatory pause of the ventricle**
- b. Complete block of excitation conduction in the ventricles
- c. Increased rate of excitation conduction in the ventricles
- d. Compensatory pause of the atria
- e. Decreased rate of excitation conduction in the atria

1004. A patient has been hospitalized into the intensive care unit with suspected carbon monoxide poisoning. What hemoglobin derivative will be detected using spectral analysis in this case?

- a. Deoxyhemoglobin
- b. Methemoglobin

- c. Carbhemoglobin
- d. Carboxyhemoglobin**
- e. Oxyhemoglobin

1005. A person in a state of rest forcibly makes his own respirations deep and frequent for 3-4 minutes. How does it affect the acid-base balance of this person?

- a. Metabolic acidosis develops
- b. Metabolic alkalosis develops
- c. Mixed acidosis develops
- d. Respiratory alkalosis develops**
- e. Respiratory acidosis develops

1006. A patient with chronic cardiovascular failure was taking digoxin. After the patient was prescribed an additional therapy, he developed signs of cardiac glycoside intoxication. What drug can accelerate the process of cardiac glycoside intoxication?

- a. Potassium chloride
- b. Asparcam (potassium aspartate and magnesium aspartate)
- c. Magnesium chloride
- d. Glucose solution
- e. Calcium chloride**

1007. A 15-year-old teenager was hospitalized into the allergology department with diagnosis of bronchial asthma. In this case the development of main clinical signs is caused by overproduction of certain antibodies. Name these antibodies:

- a. -
- b. IgD
- c. IgA
- d. IgM
- e. IgE**

1008. X-ray detected a basilar skull fracture. The fracture line passes through the foramen spinosum and foramen rotundum. What bone was damaged as a result of the injury?

- a. Frontal bone
- b. Ethmoid bone
- c. Sphenoid bone**
- d. Occipital bone
- e. Temporal bone

1009. In an experiment a laboratory rat was subjected to a stress factor (electric current), which resulted in muscular hypotonia, arterial hypotension, hypothermia, and hypoglycemia in the animal. What period of general adaptation syndrome is it?

- a. Antishock phase
- b. Exhaustion stage
- c. Resistance stage
- d. -
- e. Shock phase**

1010. Nosocomial pneumonia was diagnosed in a 38-year-old inpatient. The doctor prescribed the patient a broad-spectrum antibiotic that is resistant to beta-lactamases, inhibits peptidoglycan synthesis in the bacterial membrane, and practically cannot be degraded by dehydropeptidase-1 in the renal tubules. What antibiotic did the patient receive?

- a. Streptomycin
- b. Levofloxacin
- c. Erythromycin
- d. Meropenem**
- e. Rifabutin

1011. A patient has been provisionally diagnosed with toxoplasmosis. What biological material was used to diagnose this disease?

a. Blood

b. Duodenal contents

c. Sputum

d. Feces

e. Urine

1012. Urinalysis of a patient with acute cystitis shows leukocytes and a large number of gram-negative bacilli. Inoculation has resulted in the growth of mucous colonies that produce a green soluble pigment. What microorganism is the most likely cause of the patient's disorder?

a. *Pseudomonas aeruginosa*

b. *Klebsiella pneumoniae*

c. *Salmonella enteritidis*

d. *Proteus mirabilis*

e. *Escherichia coli*

1013. A 12-year-old boy with clinical presentation of influenza has developed respiratory mycoplasmosis. What type of infection has developed under these conditions?

a. Relapse

b. Mixed infection

c. Iatrogenic infection

d. Autoinfection

e. Superinfection

1014. To treat the burns, a patient was prescribed a drug with antiseptic properties that are based on formation of atomic oxygen in the presence of organic substances. This drug has also an astringent (anti-inflammatory) effect due to formation of albuminates. Name this drug:

a. Ethyl alcohol

b. Potassium permanganate

c. Sodium bicarbonate

d. Chlorhexidine digluconate

e. Hydrogen peroxide

1015. 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. Diacarb (Acetazolamide)

b. Theophylline

c. Allopurinol

d. Urolesan

e. Prednisolone

1016. Chest X-ray of a newborn child with convulsive syndrome and a defect of the interventricular septum revealed thymus hypoplasia. What type of immunodeficiency can be suspected in the child?

a. Bruton syndrome

b. Wiskott-Aldrich syndrome

c. Louis-Bar syndrome (ataxia- telangiectasia)

d. DiGeorge syndrome

e. Good syndrome

1017. A laboratory rat with chronic kidney failure has osteoporosis, pathologic calcification of the internal organs, and arterial hypertension. These disturbances are associated with the increased activity of the following hormone:

a. Calcitonin

b. Thyroxine

c. Triiodothyronine

d. Parathyroid hormone

e. Adrenaline

1018. What will be caused by stimulation of the carotid sinus baroreceptors in an experiment on a dog?

a. Increased parasympathetic tone

b. Increased heart rate

c. Increased sympathetic tone

d. Increased cardiac output

e. Decreased cardiac output

1019. An embryonic organ, in which the first blood corpuscles are formed, is being studied. Name this organ:

a. Red bone marrow

b. Thymus

c. Spleen

d. Liver

e. Yolk sac

1020. A patient was hospitalized in a comatose state. The patient has a 5-year-long history of diabetes mellitus type 2. Objectively respiration is noisy, deep, with acetone breath odor. Blood glucose is 15.2 mmol/L, ketone bodies - 100 micromol/L. These signs are characteristic of the following diabetes complication:

a. Hyperglycemic coma

b. Hepatic coma

c. Hypoglycemic coma

d. Ketoacidotic coma

e. Hyperosmolar coma

1021. Autopsy of the body of a 54-year-old man, who died with clinical signs of diffuse fibrinopurulent peritonitis, revealed that the mucosa in the terminal part of the ileum and in the initial part of the large intestine has numerous longitudinal fissure-like ulcers and transverse fissures, it is tubercular and has a cobblestone appearance. In some areas, perforation of ulcers with formation of intraperitoneal abscesses and fistulas was detected. What disease can be characterized by such changes?

a. Nonspecific ulcerative colitis

b. Crohn's disease

c. Menetrier's disease

d. Typhoid fever

e. Pseudomembranous colitis

1022. A tricuspid valve defect was detected in a patient. Where is it located?

a. Opening of the coronary sinus

b. Opening of the pulmonary trunk

c. Between the right atrium and right ventricle

d. Aortic opening

e. Between the left atrium and left ventricle

1023. Chemically, thyroid hormones (thyroxine and triiodothyronine) are amino acid derivatives. Name this amino acid.

a. Tryptophan

b. Proline

c. Threonine

d. Tyrosine

e. Methionine

1024. A man, who recently returned from an African country, came to the urologist complaining of painful urination. A urine sample, obtained for analysis during the daytime, contains eggs with a characteristic spike. Make the diagnosis.

a. Dicroceliasis

b. Japanese schistosomiasis



c. Opisthorchiasis

**d. Urogenital schistosomiasis**

e. Intestinal schistosomiasis

1025. A child developed high fever, punctulated rash, and conjunctivitis. The child died of superimposed pneumonia. Pulmonary histology shows endo-, meso-, and panbronchitis with giant cell pneumonia. Such changes are characteristic of:

a. Diphtheria

b. Croupous pneumonia

c. Chickenpox

d. Scarlet fever

**e. Measles**

1026. Mucosa and sputum of a patient, who for a long time was taking immunosuppressants, contain large Gram-positive oval budding cells that are arranged chaotically and elongated cells, arranged in chains. What causative agent was detected?

a. Yersinia

**b. Candida**

c. Streptococci

d. Streptobacteria

e. Actinomycetales

1027. Dwellers of a village located in the taiga make a living by harvesting berries. Lately the occurrence of alveococcosis in the village population has increased. What is the source of invasion in this case?

a. Rodents

b. Fish

c. Birds

d. Sick people

**e. Foxes**

1028. A woman underwent a surgery for a uterine tumor. A macropreparation shows a spongy variegated node that was located in the myometrium. Histology reveals large light-colored epithelial cells, among which there are many dark-colored polymorphic cells. There is no stroma. The vessels look like cavities lined with tumor cells. There are multiple hemorrhages. What tumor was detected in this case?

a. Medullary cancer

b. Adenocarcinoma

c. Destructive (malignant) hydatidiform mole

d. Cavernous hemangioma

**e. Chorioepithelioma**

1029. Bacteriology of the urine of a patient with acute cystitis allowed isolating Gram-negative motile rod-shaped microorganisms that formed large mucous green-blue colonies with the smell of caramel or jasmine on meat-peptone agar. What microorganism has most likely caused the disease in the patient?

a. *Proteus vulgaris*

b. *Klebsiella ozaenae*

c. *Escherichia coli*

**d. *Pseudomonas aeruginosa***

e. *Staphylococcus aureus*

1030. A man has a fine conjunctival rash and a rash that manifests as roseola and petechiae on the skin of his abdomen and chest. He died against the background of brain damage signs. Microscopy of the section material detected destructive proliferative endothrombovasculitis in his brain (medulla oblongata, pons), skin, kidneys, and myocardium. What disease was likely in this man?

a. Typhoid fever

**b. Typhus**

- c. Nodular periarteritis
- d. Systemic lupus erythematosus
- e. Sepsis

1031. The main part of anaerobic infections treatment is timely administration of a serum with specific antibodies. What is being neutralized by the serum in this case?

- a. Enterotoxin
- b. Exotoxin**
- c. Antitoxin
- d. Anaerobic bacteria
- e. Anatoxin

1032. A 38-year-old man with schizophrenia was treated with psychoactive drugs for a long time. He complains of uncoordinated movements, hand tremor, and sleepiness. What group of drugs can have such an effect?

- a. Tranquilizers
- b. Antidepressants
- c. Neuroleptics**
- d. Adaptogens
- e. Psychomotor stimulants

1033. A microspecimen was made from the puncture sample obtained from a patient's regional lymph node and stained according to the Romanowsky-Giemza technique. In this specimen, the doctor detected pale pink thin microorganisms with 12--14 uniform curls and sharp ends that were 10--13 mcm long. What infectious disease can be caused by the detected pathogen?

- a. Relapsing fever
- b. Trypanosomiasis
- c. Leishmaniasis
- d. Syphilis**
- e. Leptospirosis

1034. A 22-year-old woman came to a dermatologist with complaints of a purulent rash on her face and back. Her medical record indicates a H. pylori infection. Taking into account this concomitant pathology, the doctor prescribed her an antibacterial drug that will be effective both against the pathogens of soft tissue infections and against H. pylori. What antibacterial drug did the doctor prescribe?

- a. Rifampicin
- b. Oseltamivir
- c. Isoniazid
- d. Fluconazole
- e. Clarithromycin**

1035. One of the pathogenetic links in the development of radiation sickness is the intensification of the processes of free radical oxidation of substances. What substances are the main source of free radicals?

- a. Hormones
- b. Water
- c. Lipids**
- d. Carbohydrates
- e. Proteins

1036. What pathology can be caused by hereditary disorders of intestinal absorption and renal tubular reabsorption of tryptophan and other neutral acids?

- a. Hartnup disease**
- b. Huntington disease
- c. Parkinson disease
- d. Von Gierke disease
- e. Hers disease

1037. A patient with an acute transmural left ventricular myocardial infarction has died of cardiac rupture and tamponade. What process in the infarction zone could have contributed to the rupture?

- a. Increased pressure in the pulmonary circulation
- b. Replacement with connective tissue with a decrease in myocardial elasticity
- c. Scar formation with thinning of the wall of the left cardiac ventricle
- d. Thinning of the cicatricially-changed stomach wall with formation of an aneurysm
- e. Autolytic processes with pathologic softening of myocardial tissue (myomalacia)**

1038. A 64-year-old woman has suffered a pathological fracture of the humerus. Biopsy detects atypical plasma cells. X-ray shows tumor-like formations at the fracture site. What disease is likely in this case?

- a. Myeloma disease**
- b. Adenocarcinoma metastasis
- c. Fibrous dysplasia of bone
- d. Chronic osteomyelitis
- e. Chondrosarcoma

1039. A 3-year-old girl with severe progression of chickenpox has facial defects and a Mongoloid eye-shape. Her blood test shows lymphocytopenia, though her levels of B-lymphocytes and blood immunoglobulins are normal. Her medical history states that the girl had convulsions and persistent mycosis of the oral mucosa. What immunodeficiency syndrome can be characterized by such clinical and laboratory findings?

- a. Wiskott-Aldrich syndrome
- b. DiGeorge syndrome**
- c. Klinefelter syndrome
- d. Louis-Barr syndrome
- e. Turner syndrome

1040. A man presents with disturbed circulation in the myocardium of the right atrium. The disturbances occurred in the system of the following artery:

- a. Right coronary artery**
- b. Left coronary artery
- c. Anterior interventricular branch of the left coronary artery
- d. Right and left coronary arteries
- e. Circumflex branch of the left coronary artery

1041. Antileukocytic antibodies are detected in the blood of a patient with leukopenia. What type of Coombs-Gell hypersensitivity reaction developed in this case?

- a. Stimulating
- b. Anaphylactic
- c. Cytotoxic**
- d. Immune complex-mediated
- e. Delayed-type hypersensitivity

1042. There is a time limit for how long a person can stay at an altitude of over 800 meters above sea level without oxygen tanks. What is the limiting factor for the life under such conditions?

- a. Humidity level
- b. Ultraviolet radiation level
- c. Earth's gravity
- d. Temperature
- e. Partial pressure of oxygen in air**

1043. A patient with influenza has fever, dyspnea, and tachycardia. How will the oxygen affinity of Hb change under such conditions?

- a. Increase
- b. -
- c. First increases, then decreases
- d. Decrease**

e. Remain unchanged

1044. To prevent coagulation of a blood sample obtained from a patient for analysis, it was mixed with heparin solution. By its chemical structure this anticoagulant belongs to:

- a. Phospholipids
- b. Triacylglycerols
- c. Glycosaminoglycans**
- d. Heme proteins
- e. Simple proteins

1045. Gene expression is regulated by various mechanisms. What DNA segments activate the gene expression, when induced?

- a. Enhancer**
- b. Terminator
- c. Silencer
- d. Attenuator
- e. Spacer

1046. A patient complains of a headache and difficulty breathing. X-ray results allowed diagnosing the patient with frontitis (inflammation of a frontal sinus). In this case, during examination of the nasal cavity, purulent secretions will be observed in the following nasal meatus:

- a. Superior nasal meatus
- b. Middle nasal meatus**
- c. Common nasal meatus
- d. Above the upper nasal concha
- e. Inferior nasal meatus

1047. The effects of the sympathetic and parasympathetic systems on cardiovascular activity were studied in an experiment. As a result of vagus nerve stimulation, decreased blood pressure was observed. This effect of the parasympathetic system is mainly based on the following:

- a. Decrease of the peripheral vascular resistance
- b. Decrease of the heart rate**
- c. Decrease of the force of heart contractions
- d. Dilation of veins
- e. Dilation of arterioles

1048. 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. Inhibited intestinal absorption of water
- b. Decreased plasma oncotic pressure
- c. Increased osmolarity of ultrafiltrate
- d. Decreased renal reabsorption of water**
- e. Decreased renal reabsorption of sodium

1049. 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. Amoebiasis
- b. Balantidiasis
- c. Giardiasis
- d. Malaria**
- e. Trichomoniasis

1050. A 47-year-old woman complains of protracted vomiting. She has lost a large amount of gastric juice. What acid-base imbalance can be suspected in this case?

- a. Non-gaseous alkalosis**
- b. Gaseous alkalosis
- c. Metabolic acidosis
- d. Non-gaseous acidosis

e. Gaseous acidosis

1051. For relief of pain syndrome, a patient with myocardial infarction was prescribed an analgesic. The patient's condition improved, but with time the patient developed euphoria and miosis. The doctor noted respiratory depression. What medicine was prescribed in this case?

a. Meloxicam

b. Ibuprofen

c. Morphine hydrochloride

d. Paracetamol

e. Baralgin (Metamizole)

1052. A histological specimen demonstrates a vessel with the wall that consists of endothelium, basement membrane, and loose connective tissue. This vessel belongs to the following type:

a. Lymph capillary

b. Muscular vein

c. Hemocapillary

d. Non-muscular vein

e. Artery

1053. A 9-month-old child presents with delayed tooth eruption, improper sequence of tooth eruption, and horizontal maxillary configuration (high-arched palate). Microscopically enamel mineralization pattern is irregular, enamel columns are wrinkled, some of them are vacuolated, predentin zones are widened, single denticles can be observed. What disease is it?

a. Late rickets

b. Gout

c. Early rickets

d. Hypervitaminosis D

e. Osteomalacia

1054. 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 alkalosis

b. Metabolic alkalosis

c. No acid-base imbalance occurs

d. Metabolic acidosis

e. Respiratory acidosis

1055. In a 60-year-old patient, cerebral hemorrhage caused prolongation of the time spent sleeping. What structure is most likely to be damaged in this case, causing this condition?

a. Cerebral cortex

b. Reticular formation

c. Hippocampus

d. Substantia nigra

e. Corpora quadrigemina

1056. Cholera is an acute infectious disease that can be characterized by severe diarrhea and hemodynamic disorders. The mechanism of developing these symptoms is associated with increased levels of cAMP that stimulate the secretion of water and electrolytes in enterocytes. Cholera toxin activates a certain enzyme of secondary messenger synthesis. Name this enzyme.

a. Guanylate cyclase

b. Tyrosine kinase

c. Protein kinase

d. Adenylate cyclase

e. Phospholipase C

1057. A 54-year-old man was diagnosed with macrofocal myocardial infarction of the left ventricle

anterior wall. In which artery is the blood flow impaired in this case?

- a. Anterior interventricular branch of the right coronary artery
- b. Right coronary artery
- c. Circumflex branch of the left coronary artery
- d. Posterior interventricular branch of the right coronary artery
- e. Atrial branches of the left coronary artery

1058. A 45-year-old man, who for a long time was keeping to a plant-based diet, has a negative nitrogen balance. What problem with the diet caused this condition in the patient?

- a. Not enough proteins
- b. Not enough fats
- c. Not enough fats and proteins
- d. Too much water
- e. Too much carbohydrates

1059. Insufficient secretion of a certain enzyme causes incomplete digestion of fats in the gastrointestinal tract and a large amount of neutral fats in feces. Name this enzyme.

- a. Enterokinase
- b. Pancreatic lipase
- c. Pepsin
- d. Amylase
- e. Phospholipase

1060. A number of blood and connective tissue cells participate in the synthesis and release of inflammatory mediators. In what cells is interleukin-1 synthesized?

- a. Macrophages
- b. Platelets
- c. Tissue basophils
- d. Lymphocytes
- e. Eosinophilic granulocytes

1061. A patient underwent a study of the secretory activity of the stomach to clarify the diagnosis of achilia. What pathological component of gastric juice can be detected in this case?

- a. Lactate
- b. Pepsin
- c. Renin
- d. Pyruvate
- e. Gastrin

1062. One year after the subtotal resection of the stomach due to an ulcer on its lesser curvature, blood tests revealed the following changes: anemia, leuko- and thrombocytopenia, color index - 1.3, megaloblasts, and megalocytes. What factor is deficient in this case, causing the development of this pathology?

- a. Mucin
- b. Pepsin
- c. Hydrochloric acid
- d. Gastrin
- e. Castle factor

1063. Microscopy of the liver biopsy material obtained from a woman with a 10-year-long history of fatty hepatosis revealed the following: dilation and sclerosis of the portal and periportal tracts, small pseudolobules separated by narrow layers of connective tissue, marked presence of medium and large fat droplets in hepatocytic cytoplasm. What disease can be characterized by these signs?

- a. Secondary biliary cirrhosis of the liver
- b. Portal cirrhosis of the liver
- c. Incomplete septal cirrhosis of the liver
- d. Postnecrotic cirrhosis of the liver
- e. Primary biliary cirrhosis of the liver

1064. A patient with high blood levels of sulfhemoglobin was brought into the intensive care unit. What type of hypoxia occurred in this case?

- a. Tissue type
- b. Respiratory type
- c. Hemic type**
- d. Circulatory type
- e. Exogenous type

1065. A mixed helminthic infestation, consisting of intestinal ascariasis and hepatic trematodosis, has been detected in a man. What anthelmintic should be prescribed in this case?

- a. Piperazine adipinate
- b. Chloxyl
- c. Pyrantel
- d. Mebendazole**
- e. Levamisole

1066. T lymphocytes were affected by HIV. In the process, viral enzyme reverse transcriptase (RNA-dependent DNA-polymerase) catalyzes the synthesis of:

- a. Informational RNA on the viral protein matrix
- b. DNA on the viral RNA matrix**
- c. Viral DNA on the DNA matrix
- d. Viral protein on the viral RNA matrix
- e. Viral RNA on the DNA matrix

1067. One of the parts of the central nervous system has a layered arrangement of neurons, among which there are stellate, spindle-shaped, horizontal, and pyramidal cells. This structure corresponds with the following part of the nervous system:

- a. Medulla oblongata
- b. Cerebellum
- c. Spinal cord
- d. Hypothalamus
- e. Cerebral cortex**

1068. A person's diet contains a large amount of carbohydrates. What structures can be detected in the cytoplasm of hepatocytes in this case?

- a. Increased number of free ribosomes
- b. Glycogen granules**
- c. Drops of fat
- d. One big drop of fat
- e. Lipofuscin inclusions

1069. During examination a man was diagnosed with acute radiation sickness. Laboratory tests detected an acute decrease in his platelet serotonin levels. It is likely to be caused by disturbed metabolism of a certain substance. Name this substance:

- a. Phenylalanine
- b. Serine
- c. Tyrosine
- d. 5-Hydroxytryptophan**
- e. Histidine

1070. 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. Medial geniculate body
- b. Inner ear
- c. Inferior colliculi
- d. Middle ear**

e. Auditory (cochlear) nerve

1071. A test animal receives electrical impulses that irritate the sympathetic nerve that innervates blood vessels of the skin. What reaction will it cause in the blood vessels?

- a. Arterial and venous dilation
- b. Venous dilation
- c. Arterial dilation
- d. No reaction

e. Arterial and venous constriction

1072. In hepatitis and myocardial infarction, the activity of alanine and aspartate aminotransferases sharply increases in the patients' blood plasma. Why does this increase in the activity of these enzymes in the blood occur?

a. Damage to cell membranes and release of enzymes into the blood

- b. Pyridoxine deficiency
- c. Hormone-induced increase in enzyme activity
- d. Amino acid synthesis acceleration in tissues
- e. Amino acid breakdown acceleration in tissues

1073. A 48-year-old man died with signs of heart failure. Macroscopy of the heart shows that the mitral valve cusps are dense, thickened, and moderately deformed. Microscopically, the bundles of collagen fibrils are homogenized, eosinophilic, and surrounded with slight macrophage infiltration; no metachromasia. Picro-fuchsin staining reveals yellow foci. Diagnose the type of connective tissue damage:

- a. Hyalinosis
- b. Amyloidosis

c. Fibrinoid swelling

- d. Muroid swelling
- e. Sclerosis

1074. A man was hospitalized with a hemorrhage from a knife wound in the carotid triangle. The blood flowing out of the wound is dark. What vessel is damaged?

- a. External jugular vein
- b. Internal carotid artery
- c. Facial vein
- d. Facial artery

e. Internal jugular vein

1075. A patient with burn disease developed DIC syndrome as a complication. What stage of DIC syndrome is likely in this case, if Lee-White clotting time is less than 3 minutes?

a. Hypercoagulation

- b. Fibrinolysis
- c. Hypocoagulation
- d. Terminal
- e. Transient

1076. Histological specimen shows parenchyma of an organ that consists of lymphoid tissue that forms lymph nodules; the nodules are located diffusely and have a central artery. What anatomical structure has such morphological characteristics?

- a. Tonsil
- b. Red bone marrow
- c. Thymus

d. Spleen

e. Lymph node

1077. Postmortem examination of the body of a man, who died of heart failure, shows the following: mitral valve cusps are deformed, thickened, and fused together at the edges; myocardial connective tissue contains diffusely scattered nodules with patches of fibrinoid necrosis surrounded by accumulations of macrophages that resemble multinucleated giant cells. These nodules are



surrounded by lymphocytes and single plasma cells. What type of granuloma is it?

- a. Syphilitic granuloma
- b. Tuberculous granuloma
- c. Rheumatic granuloma**
- d. Leprous granuloma
- e. Actinomycotic granuloma

1078. After ligation of one of the branches of the coronary arteries in a dog, the dog developed a myocardial infarction, accompanied by the phenomena of resorption-necrotic syndrome. What is the most characteristic sign of the development of this syndrome?

- a. Decreased minute blood volume
- b. Increased blood levels of catecholamines
- c. Retrosternal pain
- d. Ventricular fibrillation
- e. Increased blood levels of creatine kinase**

1079. After removal of a tumor, the patient was prescribed 5-fluorouracil for chemotherapy. What characteristic of fluorouracil enables its usage as an antitumor medicine?

- a. It is an RNA polymerase activator
- b. It is an RNA polymerase inhibitor
- c. It is a dihydrofolate reductase inhibitor
- d. -
- e. It is a thymidylate synthase inhibitor**

1080. A man has tissue ischemia below the knee joint, accompanied by intermittent claudication. What artery is likely to be occluded in this case?

- a. Dorsalis pedis artery
- b. Popliteal artery**
- c. Deep femoral artery
- d. Descending genicular artery
- e. Proximal femoral artery

1081. When a foreign agent enters the body, the synthesis of two certain classes of immunoglobulins begins almost in parallel. However, the concentration of one of them increases and decreases faster. What are these two classes of immunoglobulins?

- a. IgA and IgD
- b. IgG and IgD
- c. IgM and IgG**
- d. IgA and IgG
- e. IgM and IgD

1082. A 5-year-old child with fever and a maculopapular rash on the skin has been hospitalized into the infectious diseases department. The doctor diagnosed the child with measles. Serological testing detects specific antibodies in the blood serum. What class of immunoglobulins indicates the acute (initial) stage of a viral infection?

- a. IgE
- b. IgG
- c. IgA
- d. IgM**
- e. IgD

1083. A patient developed hemolytic jaundice as a result of transfusion of Rh-incompatible blood. What blood test value can confirm this type of jaundice?

- a. Accumulation of unconjugated bilirubin**
- b. Decreased stercobilin levels
- c. Accumulation of urobilinogen
- d. Decreased levels of unconjugated bilirubin
- e. Decreased levels of conjugated bilirubin

1084. A 67-year-old woman has gastric cancer with metastases in the liver. What characteristic of tumor cells gives them the ability to form metastases?

- a. Immunological anaplasia
- b. Infiltrative growth**
- c. Biochemical atypism
- d. Autonomy
- e. Rapid growth

1085. A local anesthetic has been topically applied to the tip of the patient's tongue. Which taste sensation will be lost in this case?

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

1086. A woman came to a doctor with complaints of a lump in the upper lateral area of her right breast. What lymph nodes should the doctor check to make sure that the pathological process has not spread?

- a. Axillary**
- b. Anterior mediastinal
- c. Intercostal
- d. Parasternal
- e. Superior diaphragmatic

1087. A patient is diagnosed with glucocerebrosidase lipidosis (Gaucher's disease) that manifests as splenomegaly, liver enlargement, affected bone tissue, and neuropathies. What enzyme of complex lipid catabolism is deficient, causing this disease?

- a. Hexosaminidase
- b. Glucocerebrosidase**
- c. Sphingomyelinase
- d. Hyaluronidase
- e. beta-galactosidase

1088. A 37-year-old woman periodically developed infectious diseases of bacterial origin throughout the last year. Their course was extremely long, and remissions were short. Examination revealed low levels of the main classes of immunoglobulins. What cells are most likely to be dysfunctional in this case, causing the patient's condition?

- a. Macrophages
- b. Phagocytes
- c. Plasma cells**
- d. Lymphocytes
- e. Neutrophils

1089. Examination of an 18-year-old girl detects the following: underdeveloped ovaries, broad shoulders, narrow pelvis, shortened legs, "neck of the sphinx", normal mental development. Provisionally, she was diagnosed with Turner syndrome. What method can be used to confirm this pathology?

- a. Biochemical method
- b. Dermatoglyphics
- c. Cytogenetics**
- d. Twin study
- e. Genealogical method

1090. Increased reabsorption of calcium ions and decreased reabsorption of phosphate ions was detected in the patient's kidneys. What hormone has caused such changes?

- a. Thyrocalcitonin
- b. Parathormone**

- c. Vasopressin
- d. Thyroxine
- e. Aldosterone

1091. A 37-year-old man was hospitalized into the STD department with the diagnosis of syphilis. What medicine will be used for his treatment?

- a. Nitroxoline
- b. Benzylpenicillin**
- c. Levomycetin (Chloramphenicol)
- d. Biseptol (Co-trimoxazole)
- e. Tetracycline

1092. Inhibition of nociceptive information occurs with the participation of many mediators, except:

- a. Endorphin
- b. GABA
- c. Serotonin
- d. Noradrenaline
- e. Glutamate**

1093. A 40-year-old person developed elevated blood pressure after an emotional excitement. What is the likely cause of this effect?

- a. Decreased cardiac contraction frequency
- b. Hyperpolarization of cardiomyocytes
- c. Increased parasympathetic nervous system tone
- d. Increased sympathetic nervous system tone**
- e. Arteriolar dilation

1094. Five-eight days after administering a significant amount of therapeutic serum, the patient developed a skin rash, itching, edemas, joint pain, and an increase in body temperature. Protein appeared in the urine. The patient was diagnosed with serum sickness. What is an important factor in the pathogenesis of this condition?

- a. Activation of T-killers
- b. Activation of macrophages
- c. Degranulation of tissue basophils
- d. Accumulation of circulating immune complexes in the blood**
- e. Cytolysis of blood cells

1095. Birds migrate from cold regions to warm regions every year, each time arriving to the same area. What instinct drives them?

- a. Thermoregulating instinct
- b. Protective instinct
- c. Ecological instinct
- d. Orienting instinct**
- e. Play instinct

1096. Examination of a patient shows decreased leukocyte and erythrocyte count and low hemoglobin levels in peripheral blood, as well as appearance of large cells (megaloblasts). What vitamin deficiency can cause these clinical presentations?

- a. Folic acid**
- b. Biotin
- c. Riboflavin
- d. Ascorbic acid
- e. Niacin

1097. A proton pump inhibitor has been prescribed to a patient diagnosed with hypersecretory gastritis. What is the physiological reasoning behind this prescription?

- a. The  $K^+/Na^+$  pump functioning is blocked
- b. The influx of  $Cl^-$  ions into the gastric cavity decreases
- c. The metabolism of parietal cells decreases

d. The influx of  $H^+$  ions into parietal cells decreases

e. The influx of  $H^+$  ions into the gastric cavity decreases

1098. A 45-year-old man with a past case of left-sided croupous pneumonia died of multiple trauma in a traffic accident. Autopsy shows that the posteriolateral wall of the lower left pulmonary lobe is fused to the chest wall with fibrous commissures. The lobe is shrunken, dense, pink-gray. It has meat-like appearance on section and its pieces sink in the water. Histology shows diffuse proliferation of fibrous connective tissue in these areas. What complication of croupous pneumonia is it?

a. Carnification

b. Abscess

c. Emphysema

d. Atelectasis

e. Gangrene

1099. During inflammation modelling in a frog's mesentery, leukocyte margination and emigration through the vessel wall were observed. What factor causes this process?

a. Effect of chemotactic substances

b. Increased hydrostatic pressure in the vessels

c. Decreased hydrostatic pressure in the vessels

d. Decreased oncotic pressure in the vessels

e. Increased oncotic pressure in the inflammation focus

1100. Energy is necessary for the work of cardiac muscle. What substrate is the main source of energy in the working muscle?

a. Fatty acids

b. Ketoglutaric acid

c. Amino acids

d. Lactic acid

e. Pyruvic acid

1101. A woman was hospitalized into the pulmonology department with the diagnosis of exudative pleurisy. In what pleural sinus will the largest amount of inflammatory exudate accumulate?

a. Mediastinodiaphragmatic recess

b. Transverse pericardial sinus

c. -

d. Costodiaphragmatic recess

e. Costomediastinal recess

1102. A patient with a chronic pulmonary disease developed restrictive respiratory failure. What is the most likely cause of this development?

a. Foreign body in the bronchial lumen

b. Airway compression due to a tumor

c. Disturbed mucociliary transport and accumulation of mucus

d. Laryngospasm

e. Inflammatory processes in the lungs

1103. A 57-year-old man has been hospitalized in a severe condition. His blood biochemistry test shows the following: blood pH - 7.33, arterial blood  $pCO_2$  - 36 mm Hg, sodium bicarbonate - 17 mmol/L, base excess is +6 mmol/L. What type of acid-base imbalance is observed in this case?

a. Compensated non-gaseous acidosis

b. Decompensated non-gaseous alkalosis

c. Decompensated non-gaseous acidosis

d. Compensated gaseous alkalosis

e. Compensated non-gaseous alkalosis

1104. A patient was prescribed a drug with methionine to maintain liver function. Synthesis of what substance is ensured in this case?

a. Phosphatidylserine

b. Citrate

c. Pyruvate

**d. Phosphatidylcholine**

e. Lactate

1105. A patient has a perforated ulcer in the posterior gastric wall. Into what structure will the stomach contents be released in this case?

a. Bursa hepatica

b. Bursa pregastrica

**c. Bursa omentalis**

d. Sinus mesentericus sinister

e. Sinus mesentericus dexter

1106. In an experiment on a dog, it became necessary to reduce the excitability of the myocardium. What solution should be administered to the animal intravenously for this purpose?

**a. Potassium chloride**

b. Sodium chloride

c. Sodium bicarbonate

d. Glucose

e. Calcium chloride

1107. A man is 33 years old. His condition lasts for 10 years already. Periodically he makes an appointment with the doctor, complaining of acute stomachache, seizures, and vision impairment. Similar signs are observed in the patient's relatives. Patient's urine is red. He was hospitalized with diagnosis of acute intermittent porphyria. This condition can be caused by disturbed synthesis of:

a. Prostaglandins

b. Collagen

c. Bile acids

d. Insulin

**e. Heme**

1108. In the pulmonological unit a patient with obstructive bronchitis with spastic component was prescribed a broncholytic agent. Therapeutic effect of this drug is based on stimulation of beta\_2-adrenergic receptors in the bronchial smooth muscles. Name this drug:

a. Prednisolone

**b. Salbutamol**

c. Cromoglicic acid

d. Theophylline

e. Methacin

1109. A patient has been diagnosed with psychosis. After two weeks of receiving pharmacotherapy, the patient's condition improved. However, the patient soon developed rigidity, tremors, and hypokinesia. What drug causes these complications?

a. Diphenin (Phenytoin)

b. Chlordiazepoxide

**c. Aminazine (Chlorpromazine)**

d. Imizin (Imipramine)

e. Sydnocarb (Mesocarb)

1110. In a patient with anemia, the levels of protoporphyrin IX increased in erythrocytes. What mineral element is deficient in this case, causing this pathology?

a. Phosphorus

b. Potassium

c. Sodium

**d. Iron**

e. Magnesium

1111. After hyperventilation an athlete developed a brief respiratory arrest. It occurred due to the following changes in the blood:

a. Decrease of O<sub>2</sub> pressure

b. Decrease of pH

**c. Decrease of CO<sub>2</sub> pressure**

d. Increase of CO<sub>2</sub> and O<sub>2</sub> pressure

e. Increase of CO<sub>2</sub> pressure

1112. A patient has an injury of soft tissues and parietal bones in the area of their junction. The injury is accompanied by heavy bleeding. What vascular formation is damaged in this case?

a. Sinus petrosus superior

**b. Sinus sagittalis superior**

c. Sinus sagittalis inferior

d. Sinus rectus

e. Sinus transversus

1113. The course of hemorrhagic shock was complicated by the development of acute kidney failure in a man, who has been brought into the hospital by an emergency medical team. What is the leading link in the mechanism of complication development in this case?

a. Development of DIC syndrome

b. Activation of the sympathoadrenal system

c. Release of vasopressin into the blood

d. Increased permeability of the capillary wall

**e. Centralization of blood circulation with the development of renal ischemia**

1114. A woman with menstrual disorders that include prolonged bleeding presents with hypochromia, low reticulocyte count, microcytosis, and hyposideremia. What pathogenetic group of anemia is it?

**a. Iron-deficiency anemia**

b. Hemolytic anemia

c. B<sub>12</sub> and folate-deficiency anemia

d. Hypoplastic anemia

e. Metaplastic anemia

1115. In the lungs, an enzyme breaks down carbonic acid (H<sub>2</sub>CO<sub>3</sub>) into water and carbon dioxide that is released with the air. What enzyme catalyzes this reaction?

a. Peroxidase

b. Catalase

**c. Carbonic anhydrase**

d. Cytochrome

e. Cytochrome oxidase

1116. A patient with hepatic pathology developed bradycardia, low blood pressure, and signs of nervous system depression. What hepatic pathology can be characterized by these signs?

**a. Cholemic syndrome**

b. Portal hypertension syndrome

c. Acholic syndrome

d. Dyscholia

e. Hepatorenal syndrome

1117. A man has a vitamin D deficiency, which causes the malabsorption of:

a. Chlorine

b. Sodium

**c. Calcium**

d. Iron

e. Water

1118. Pathogenic bacteria can actively penetrate into the internal environment of the body and intensively spread through the tissues. What enzyme gives bacteria their invasive properties?

a. Catalase

**b. Hyaluronidase**

c. Oxidoreductase

d. Plasma coagulase

e. Lactase

1119. A 20-year-old man periodically develops weakness and icteric sclerae and skin. He was diagnosed with Minkowski-Chauffard disease. What hematological status is the most characteristic of this disease?

- a. Thrombocytosis
- b. Agranulocytosis
- c. Anulocytosis
- d. Macrocytosis

**e. Microspherocytosis**

1120. In stress conditions an elderly person developed elevated blood pressure. It is caused by activation of:

- a. Pituitary functions
- b. Parasympathetic nucleus of the vagus nerve
- c. Adrenocortical functions

**d. Sympathoadrenal system**

e. Thyroid functions

1121. A patient diagnosed with pulmonary tuberculosis underwent a treatment with isoniazid. Recently, the patient has developed signs of hypovitaminosis B<sub>6</sub>. What is the cause of the pathological condition in this case?

- a. Vitamin elimination is accelerated
- b. A strong bond forms between the vitamin and blood plasma proteins

**c. Isoniazid is an antagonist of vitamin B<sub>6</sub>**

- d. Vitamin biotransformation is accelerated
- e. Vitamin absorption is slowed down

1122. Hepatocytes of a man, who died of chronic alcoholism, have an increased count of single membrane-bound organelles that contain catalase enzyme and take part in the detoxification process. Name these organelles:

**a. Peroxisomes**

- b. Ribosomes
- c. Mitochondria
- d. Lysosomes
- e. Golgi apparatus

1123. A certain natural antioxi-dan is used in treatment of parodontosis. Which of the listed natural compounds is used as an antioxidant?

- a. Choline
- b. Tocopherol**
- c. Pyridoxine
- d. Thiamine
- e. Gluconate

1124. A 63-year-old patient develops angina pectoris attacks during physical exertion. What group of drugs should be prescribed for their prevention?

**a. Antianginal drugs**

- b. Antihypertensive drugs
- c. Antiarrhythmic drugs
- d. Respiratory stimulants
- e. Cardiotonics

1125. A patient with asphyxia after a brief respiratory arrest developed single infrequent respirations with passive expiration, after which he stopped breathing completely. What type of respiration was observed in this case?

- a. Biot respiration
- b. Cheyne-Stokes respiration
- c. Apneustic respiration

d. Kussmaul respiration

**e. Gasping respiration**

1126. Examination detected the following changes in the patient's peripheral blood: erythrocytes -  $3.0 \cdot 10^{12}/L$ , Hb - 80 g/L, leukocytes -  $21 \cdot 10^9/L$ . The following is observed in the leukogram: basophils - 0%, eosinophils - 0%, myeloblasts - 54%, promyelocytes - 1%, myelocytes - 0%, metamyelocytes - 0%, band neutrophils - 1%, segmented neutrophils - 28%, lymphocytes - 13%, monocytes - 3%. What pathology corresponds with these findings?

a. Undifferentiated leukemia

**b. Acute myeloblastic leukemia**

c. Chronic myeloid leukemia

d. Erythromyelosis

e. Leukemoid reaction

1127. A bacteriological laboratory is examining canned vegetables that have caused botulism in several people. What cultivation conditions play a leading role in the detection of the causative agents in the test material?

a. The nutrient medium contains vitamins and amino acids

b. Antibiotics are added into the nutrient medium to inhibit gram-negative microflora

c. The temperature of the nutrient medium must not exceed  $35^{\circ}C$

d. Alkaline reaction of the nutrient medium

**e. No oxygen**

1128. The pregnant woman's condition was complicated by toxicosis. Laboratory testing detects ketonuria. What substance appeared in the patient's urine?

a. Urates

b. Creatinine

c. Lactate

**d. Acetoacetate**

e. Pyruvate

1129. A patient with marked pneumosclerosis after recovery from infiltrative pulmonary tuberculosis developed respiratory insufficiency. What pathogenetic type of respiratory insufficiency is it?

**a. Restrictive**

b. Reflex

c. Dysregulatory

d. Apneustic

e. Obstructive

1130. During appointment with the dentist, patients often develop anxiety, fear, and depression. These psychoemotional disturbances can be reduced if secretion of a certain mediator is intensified in the central nervous system. Name this mediator:

a. Acetylcholine

b. Dopamine

**c. Serotonin**

d. GABA

e. Noradrenaline

1131. A man suffers from cortical blindness. In this case, thrombosis developed in the following artery:

**a. Posterior cerebral artery**

b. Anterior choroid artery

c. Medial cerebral artery

d. Posterior communicating artery

e. Anterior cerebral artery

1132. Hypovitaminosis C causes decreased formation of organic matrix and disturbs the collagen synthesis, because this vitamin takes part in the processes of:

a. Arginine hydroxylation



- b. -
- c. Lysine carboxylation
- d. Proline hydroxylation**
- e. Proline carboxylation

1133. A patient with severe poisoning was brought into the intensive care unit. In the course of complex treatment the subclavian vein needs to be catheterized for medicine administration. This vein is located in the following topographic structure:

- a. Trigonum omotracheoideum
- b. Spatium antescalenum**
- c. Spatium retrosternocleidomastoideus
- d. Spatium interaponeuroticum suprasternale
- e. Spatium interscalenum

1134. Unlike the nerve cells that do not reproduce, the stem cell can regenerate multiple times. The process of repeated cell regeneration is called:

- a. Apoptosis
- b. Atrophy
- c. Differentiation
- d. Proliferation**
- e. Hypertrophy

1135. A child has a hereditary skin condition - no sweat glands (anhidrosis) - which impairs important skin functions - perspiration and thermoregulation. This condition results from maldevelopment of the following structure during embryogenesis:

- a. Sclerotome
- b. Splanchnotome
- c. Endoderm
- d. Ectoderm**
- e. Dermatome

1136. A patient complains of pain in the area of the liver. Duodenal probing detected oval yellowish eggs, narrowed towards the pole, where an operculum is located. The size of these eggs is the smallest among all helminth eggs. What type of helminthiasis is observed in the patient?

- a. Opisthorchiasis**
- b. Taeniasis
- c. Enterobiasis
- d. Taeniarhynchiasis
- e. Diphyllbothriasis

1137. The neurological department received a patient complaining of memory deterioration and loss of mental work capacity that developed after a head trauma. Recommend him a medicine for improvement in cerebral metabolism:

- a. Caffeine
- b. Piracetam (Nootropil)**
- c. Meridil (Methylphenidate)
- d. Sydnocarb (Mesocarb)
- e. Analgin (Metamizole)

1138. X-ray shows a shadow in the right maxillary sinus, which indicates an accumulation of pus. Into what nasal meatus will this pathological fluid be discharged?

- a. Right supreme nasal meatus
- b. Right middle nasal meatus**
- c. Right common nasal meatus
- d. Right inferior nasal meatus
- e. Right superior nasal meatus