

1. 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. Serotonin
- e. Adrenalin

2. 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. Dysentery, cholera
- b. Q fever, typhus
- c. Poliomyelitis, hepatitis A
- d. Tuberculosis, mycobacteriosis

**e. Infectious mononucleosis, AIDS**

3. 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. -
- b. Thymidine monophosphate
- c. Uridine monophosphate
- d. Cytidine monophosphate

**e. Adenosine monophosphate**

4. 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. Cingulate gyrus

**c. Postcentral gyrus**

- d. Precentral gyrus
- e. Angular gyrus

5. 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 adrenal glands
- b. Metastases into the peribronchial, bifurcation, and paratracheal lymph nodes
- c. Metastases into the brain

**d. Small multiple tumor nodules on the pleura**

- e. Invasion of the tumor from the bronchus into the esophagus

6. Blood test shows low hemoglobin levels. What function of the blood will be disturbed in this case?

**a. Gas transport**

- b. Coagulability
- c. Immunity maintenance
- d. Nutrient transport
- e. Hormone transport

7. 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. Red nuclei
- c. Lateral vestibular nuclei

**d. Corpora quadrigemina**

- e. Medial reticular nuclei

8. 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. Acute myeloblastic leukemia**

- b. Undifferentiated leukemia
- c. Erythromyelosis
- d. Chronic myeloid leukemia
- e. Leukemoid reaction

9. The infectious diseases department received a patient with acute respiratory viral disease and body temperature of 39.5°C. What antipyretic drug should be prescribed in this case?

- a. Salbutamol
- b. Ambroxol
- c. Retabolil (Nandrolone)
- d. Adrenaline hydrochloride

**e. Paracetamol**

10. 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 butyrylcholinesterase**

- b. Genetic deficiency of hydroxylases
- c. Genetic deficiency of monoamine oxidase
- d. Inhibition of microsomal oxidation
- e. Formation of active metabolite

11. 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. Acute bronchitis
- b. Chronic bronchitis
- c. Abscess
- d. Tuberculosis

**e. Bronchiectasis**

12. 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. Antigen stimulation**

- b. Neoplastic aberration
- c. Congenital deficiency of lymphoid tissue
- d. Acquired deficiency of lymphoid tissue
- e. Transplant rejection

13. 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. Dicain (Tetracaine)
- b. Anaesthesin (Benzocaine)
- c. Diphenine (Phenytoin)
- d. Cocaine hydrochloride

**e. Lidocaine hydrochloride**

14. In stress conditions an elderly person developed elevated blood pressure. It is caused by activation of:

**a. Sympathoadrenal system**

- b. Adrenocortical functions
- c. Pituitary functions
- d. Thyroid functions
- e. Parasympathetic nucleus of the vagus nerve

15. 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. Granulomatous
- b. Hemorrhagic
- c. Purulent
- d. Catarrhal
- e. Fibrinous**

16. A patient is in a state of anaphylactic shock. What drug should be used for urgent treatment of this condition?

- a. Adrenaline hydrochloride**
- b. Fenoterol
- c. Noradrenaline hydrogen tartrate
- d. Phenylephrine
- e. Salbutamol

17. A patient is diagnosed with glucocerebrosidase lipidoses (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. beta-galactosidase
- c. Glucocerebrosidase**
- d. Hyaluronidase
- e. Sphingomyelinase

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

19. 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. Multiple bronchiectasis**
- c. Pneumofibrosis
- d. Pulmonary emphysema
- e. Chronic bronchitis

20. 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  $H^+$ ,  $K^+$ -ATPase activity
- b. Histamine H<sub>2</sub> receptor blockade**
- c. Histamine H<sub>1</sub> receptor blockade
- d. Blockade of histamine receptors in the sympathetic ganglia
- e. Muscarinic M<sub>1</sub> receptor blockade

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

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

e. Neurosensory cells - rods

22. 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. D cells
- b. B cells
- c. PP cells
- d. D1 cells

e. A cells

23. 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 4
- b. CD 28
- c. CD 3
- d. CD 19
- e. CD 8

24. 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. Glossopharyngeal nerve
- b. Recurrent laryngeal nerve

c. Vagus nerve

- d. Carotid sinus nerve (Hering's nerve)
- e. Inferior cervical cardiac nerve (Pavlov's nerve)

25. 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. Complement fixation reaction
- b. Hemadsorption reaction
- c. Precipitation reaction

d. Indirect (passive) hemagglutination reaction

e. Neutralization reaction

26. 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. Rheumatic aortitis
- c. Atherosclerotic aortic aneurysm
- d. Nodular polyarteritis
- e. Nonspecific aortoarteritis

27. 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.  $K^{+}$
- b.  $Cl^{-}$
- c.  $HCO_3^{-}$

d.  $Na^{+}$

e.  $Ca^{2+}$

28. 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 alkalosis develops
- b. Metabolic acidosis develops
- c. Respiratory alkalosis develops

d. Respiratory acidosis develops

e. Mixed acidosis develops

29. 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 right

b. Horizontal

c. Vertical

d. -

e. Deviated to the left

30. After a case of severe infectious disease the patient developed signs of diabetes insipidus, which was indicated by daily urine output increased up to 10 liters. What mechanism of dehydration development is leading in this case?

a. Increased osmolarity of ultrafiltrate

b. Inhibited intestinal absorption of water

c. Decreased renal reabsorption of sodium

d. Decreased renal reabsorption of water

e. Decreased plasma oncotic pressure

31. 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. Non-competitive antagonism

b. Competitive antagonism

c. Additive synergism

d. Potentiated synergism

e. Synergiantagonism

32. 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. Basal ganglia

b. Limbic system

c. Thalamus

d. Cerebellum

e. Precentral gyrus of the cerebral cortex

33. 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. Popliteal

c. Posterior cervical

d. Inguinal

e. Submandibular

34. 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 microvascular permeability

b. Disturbed lymphatic efflux

c. Increase of osmotic pressure in the inflammation focus

d. Increase of capillary blood pressure

e. Decrease of oncotic blood pressure

35. A patient diagnosed with chronic glomerulonephritis developed persistent arterial hypertension. What group of drugs should be used for the treatment of this patient?

a. Calcium antagonists

b. alpha-blockers

c. Ganglionic blockers

d. Angiotensin-converting enzyme inhibitors

e. Myotropic antispasmodics

36. 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. DNA repair
- b. Gene amplification
- c. Formation of Okazaki fragments
- d. DNA replication

**e. Genetic recombination**

37. 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. Cremaster muscle
- b. Internal spermatic fascia
- c. External spermatic fascia
- d. Tunica dartos

**e. Parietal layer of the tunica vaginalis of the testicle**

38. 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. Fibroma
- c. Papilloma

**d. Lipoma**

**e. Hemangioma**

39. A transplanted kidney responds to painful stimuli by stopping urination. What causes this response?

- a. Decreased secretion of ACTH
- b. Decreased secretion of ADH
- c. Effect of the sympathetic nervous system
- d. Effect of the parasympathetic nervous system

**e. Increased secretion of ADH**

40. 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. Tuberculosis
- b. Typhus

**c. Typhoid fever**

- d. Dysentery
- e. Cholera

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

**e. Lipid metabolism**

42. 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. Mosaicism**

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

43. 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 root of the lungs

b. Phrenicomedial recess

c. Costodiaphragmatic recess

d. Costomediastinal recess

e. Under the pleural dome

44. 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. Hemoproteins

b. Simple proteins

c. Phospholipids

d. Glycosaminoglycans

e. Triacylglycerols

45. 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. Omeprazole

b. Pirenzepine

c. Famotidine

d. Misoprostol

e. Sucralfate

46. 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 lingualis

b. Gyrus angularis

c. Gyrus parahippocampalis

d. Gyrus paracentralis

e. Gyrus supramarginalis

47. Gene expression is regulated by various mechanisms. What DNA segments activate the gene expression, when induced?

a. Spacer

b. Terminator

c. Enhancer

d. Attenuator

e. Silencer

48. 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. Metabolic stimulant

b. Acetylcholine synthesis activator

c. Direct-acting cholinomimetic

d. Anticholinesterase action

e. Inhibitor of braking processes

49. 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. Taeniarhynchosis

c. Trichinellosis

d. Cysticercosis

e. Echinococcosis

50. A patient with high blood levels of sulfhemoglobin was brought into the intensive care unit. What type of hypoxia occurred in this case?

a. Exogenous type

b. Circulatory type

c. Tissue type

d. Hemic type

e. Respiratory type

51. 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. Gene amplification**

c. Nucleotide composition analysis of rRNA

d. Nucleotide composition analysis of tRNA

e. Nucleotide composition analysis of mRNA

52. 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. Plasmids

**c. Volutin granules**

d. Capsule

e. Spores

53. A man presents with noticeable progressive muscular dystrophy. What indicator of urinary nitrogen metabolism is characteristic of this condition?

a. Creatinine

b. Ammonium salts

c. Uric acid

**d. Creatine**

e. Urea

54. 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. Marfan syndrome**

d. Down syndrome

e. Klinefelter syndrome

55. 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. Peripheral vision

**b. Accommodation**

c. Blinking

d. Convergence of eyeballs

e. Refraction

56. 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. Carnitine shuttle system

b. Glycerol phosphate shuttle system

**c. Malate shuttle system**

d. Lactate shuttle system

e. Alanine shuttle system

57. 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 pregastrica

b. Sinus mesentericus dexter

c. Sinus mesentericus sinister

d. Bursa hepatica

**e. Bursa omentalis**



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

59. 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. Secondary renal amyloidosis**
- b. Fibroplastic glomerulonephritis
- c. Postinfectious glomerulonephritis
- d. Rapidly progressive glomerulonephritis
- e. Acute necrotizing nephrosis

60. Antigen-presenting cells play a major role in the immune response in the process of cell cooperation. What cells are antigen-presenting?

- a. Helper T cells, B-lymphocytes
- b. Natural killers: NK and K cells
- c. Dendritic cells, killer T cells
- d. Helper T cells, killer T cells

**e. Macrophages, B-lymphocytes**

61. 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. Kanamycin
- b. Para-aminosalicylic acid

**c. Isoniazid**

- d. Rifampicin
- e. Thioacetazone

62. 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. Anti-anthrax immunoglobulin
- b. Anti-anthrax fluorescent serum**
- c. Enzyme-tagged immunoglobulin
- d. Monoclonal antibodies to anthrax causative agent
- e. Standard anthrax antigen

63. 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. Twin study
- d. Genealogical method

**e. Cytogenetics**

64. Oxygen supply of an isolated mammalian nerve cell was completely stopped. How will the resting potential change in this case?

- a. Increase insignificantly
- b. Disappear**
- c. Increase significantly
- d. Remain unchanged
- e. Decrease significantly

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

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

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

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

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

69. 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. Glycolysis
- b. Lipogenesis

- c. Lipolysis
- d. Beta-oxidation of fatty acids
- e. Gluconeogenesis

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

71. 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. First-degree atrioventricular block
- b. Complete atrioventricular block
- c. Intraventricular block
- d. Intraatrial block
- e. Second-degree atrioventricular block

72. 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. Baralgin (Metamizole)

**b. Morphine hydrochloride**

c. Meloxicam

d. Paracetamol

e. Ibuprofen

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

a. Deep peroneal nerve

b. Superficial peroneal nerve

c. Sural nerve

d. Femoral nerve

**e. Tibial nerve**

74. An older woman has broken her arm four times already. What substance makes bones more fragile, if its concentration is increased?

a. Water

**b. Nonorganic substances**

c. Extracellular fluid

d. Organic substances

e. Binding substance

75. 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 increases

b. RMP and excitability remain unchanged

c. RMP increases, excitability decreases

d. RMP decreases, excitability remains unchanged

**e. RMP decreases, excitability increases**

76. 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. pronator teres**

b. M. supinator

c. M. pronator quadratus

d. M. flexor pollicis longus

e. M. flexor digitorum profundus

77. A patient, who underwent a long-term glucocorticoid treatment, presents with gastric ulcers. What mechanism is the main one in their development?

**a. Increased secretion and acidity of gastric juice**

b. Decreased levels of histamine in the gastric mucosa

c. Increased tone of the sympathetic nervous system

d. Increased production of prostaglandins E1 and E2

e. Decreased tone of the parasympathetic nervous system

78. A tricuspid valve defect was detected in a patient. Where is it located?

a. Aortic opening

b. Opening of the pulmonary trunk

c. Between the left atrium and left ventricle

d. Opening of the coronary sinus

**e. Between the right atrium and right ventricle**

79. 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. Thyroxine**

b. Somatotropin

c. Cortisol

- d. Insulin
- e. Glucagon

80. 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 sigmoideus
- b. Sinus transversus
- c. Sinus sagittalis inferior
- d. Sinus rectus

**e. Sinus sagittalis superior**

81. 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 zone of resistance
- b. Decreased resistance**
- c. Decreased amplitude of resistance
- d. Increased amplitude of resistance
- e. Increased resistance

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

- a. Thyroxine
- b. Somatomedins
- c. Insulin-like growth factors

**d. Prostaglandins**

e. Biogenic amines

83. 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. Myiasis
- c. Demodicosis
- d. Dermatotropic leishmaniasis
- e. Pediculosis

84. 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. Adrenal medulla hyperfunction
- b. Hypothyroidism

**c. Ovarian failure**

- d. Pancreatic islet failure
- e. Hyperthyroidism

85. 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. Increased levels of somatotrophic hormone**
- d. Increased thyroxine levels
- e. Increase catecholamine levels

86. 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 retrosternocleidomastoideus
- c. Spatium interscalenum
- d. Spatium antescalenum**

e. Spatium interaponeuroticum suprasternale

87. 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. Rest at a resort
- b. Alcohol drinking

c. Physical exertion

- d. Drinking large amounts of water
- e. Mental exertion

88. 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 active
- b. Artificial active
- c. -
- d. Natural passive

e. Artificial passive

89. 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. *Bacillus anthracis*

- b. *Streptococcus pneumoniae*
- c. *Klebsiella pneumoniae*
- d. *Bordetella pertussis*
- e. *Mycobacterium tuberculosis*

90. 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. Centrosomes
- b. Mitochondria
- c. Ribosomes

d. Endoplasmic reticulum

e. Golgi complex

91. 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. Reduced oncotic blood pressure

- c. Increased permeability of capillaries
- d. Increased hydrostatic blood pressure in the capillaries
- e. Impaired lymphatic efflux

92. 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. Membranous glomerulonephritis
- c. Acute suppurative interstitial nephritis
- d. Lipoid nephrosis

e. Postinfectious glomerulonephritis

93. 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. Chronic kidney failure
- b. Nephrotic syndrome

- c. Chronic pyelonephritis
- d. Acute kidney failure
- e. Nephritic syndrome

94. 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 acidosis
- b. Mixed alkalosis
- c. Respiratory acidosis
- d. Respiratory alkalosis
- e. Metabolic alkalosis

95. 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. Left atrium
- b. -
- c. Right atrium
- d. Right ventricle

e. Left ventricle

96. 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. Dyshormonal disorders
- b. Cancer

c. Pericanalicular fibroadenoma

- d. Adenocarcinoma
- e. Sarcoma

97. 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. Polycystic ovary syndrome (Stein-Leventhal syndrome)

- b. Adrenogenital syndrome
- c. Premenstrual syndrome
- d. Androblastoma of the ovaries
- e. Chronic bilateral adnexitis

98. 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. Ulnar nerve
- b. Axillary nerve

c. Radial nerve

- d. Median nerve
- e. Musculocutaneous nerve

99. 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. Carbohydrate determinants of erythrocyte membranes

- b. Blood serum proteins
- c. Carbohydrate determinants of leukocyte membranes
- d. Protein-polysaccharide components of leukocytes
- e. Protein determinants of erythrocyte membranes

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

101. Ammonia is extremely toxic for human CNS. What is the main way of ammonia neutralization in the nervous tissue?

- a. Transamination
- b. Urea synthesis
- c. Glutamine synthesis**
- d. Ammonium salts synthesis
- e. Formation of paired compounds

102. A 9-year-old boy, who undergoes treatment in the inpatient department, has high blood pressure and problems with kidneys. This condition is caused by high levels of a certain bioactive peptide. Name this peptide:

- a. Glucagon
- b. Angiotensin II**
- c. Kallidin
- d. Antidiuretic hormone
- e. Insulin

103. 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. Unithiol
- b. Suxamethonium
- c. Dimedrol (Diphenhydramine)
- d. Oxytocin**
- e. Chlorpromazine

104. 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. Centralization of blood circulation with development of renal ischemia**
- b. Activation of the sympathoadrenal system
- c. Development of DIC syndrome
- d. Increased permeability of the capillary wall
- e. Release of vasopressin into the blood

105. 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 75%
- b. Equals 25%
- c. Equals 50%
- d. Equals 100%
- e. Equals 0%**

106. 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 glucose absorption in the intestine
- b. Stimulates secretion of endogenous insulin by beta cells**
- c. Intensifies peripheral glucose utilization
- d. Inhibits gluconeogenesis in the liver
- e. Inhibits alpha-glucosidase and breakdown of polysaccharides

107. 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 oxidative enzyme systems
- c. Combination of hemoglobin with sulfonamides
- d. Oxidation of iron in hemoglobin**

e. Blockade of reducing enzyme systems

108. 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. Respiratory arrest**

- b. Acute disruption of vascular tone regulation
- c. Cardiac arrest
- d. Development of hypovolemic shock
- e. Development of collapse

109. During inflammation modelling in a frog's mesentery, leukocyte margination and emigration through the vessel wall were observed. What factor causes this process?

- a. Decreased hydrostatic pressure in the vessels
- b. Increased oncotic pressure in the inflammation focus

**c. Effect of chemotactic substances**

- d. Decreased oncotic pressure in the vessels
- e. Increased hydrostatic pressure in the vessels

110. 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. Hodgkin's lymphoma

**b. Sarcoidosis**

- c. Acute lymphadenitis
- d. Lymphosarcoma
- e. Tuberculosis

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

**e. Nucleotides**

112. 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. Mycoplasmas have no cell wall**

- b. Mycoplasmas produce no relevant transport proteins
- c. The pathogen reproduces inside the cells
- d. Mycoplasmas produce an enzyme that breaks down penicillin
- e. Mycoplasma membrane contains cholesterol

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

a. Hydroxylation

**b. Limited proteolysis**

- c. Acetylation
- d. Methylation
- e. Phosphorylation

114. 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. Lipids
- b. Proteins**
- c. Nucleic acids
- d. Phospholipids
- e. Polysaccharides

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

116. 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. Osteomalacia
- d. Hypervitaminosis D
- e. Early rickets**

117. 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. Cholera**
- b. Amebiasis
- c. Salmonellosis
- d. Typhoid fever
- e. Bacterial dysentery

118. 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. Peroneus longus muscle**
- b. Soleus muscle
- c. Flexor hallucis longus muscle
- d. Triceps muscle of calf
- e. Anterior tibial muscle

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

120. 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. Transformation
- b. -
- c. Immune suppression of the tumor
- d. Promotion**
- e. Initiation

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

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

e. O<sub>2</sub> intake

122. 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. Atrial extrasystole
- b. Atrioventricular extrasystole
- c. Paroxysmal tachycardia
- d. Sinus arrhythmia

e. Ventricular extrasystole

123. 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. Vital lung capacity
- d. Expiratory reserve volume
- e. Inspiratory reserve volume

124. 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. Portal hypertension syndrome
- b. Hepatorenal syndrome

c. Cholemic syndrome

- d. Dyscholia
- e. Acholic syndrome

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

- a. Shortening of the eyeball
- b. Retinal atrophy
- c. Clouding of the lens
- d. Elongation of the eyeball

e. Decreased elasticity of the lens

126. 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. ulnaris
- c. N. radialis
- d. N. axillaris

e. N. musculocutaneus

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

- a. Na<sup>+</sup> salts
- b. Pepsin

c. Bile acids

- d. Enterokinase
- e. Hydrochloric acid

128. 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. Megalocytes

- b. Elliptocytes
- c. Normocytes
- d. Microcytes

e. Anulocytes

129. What substances are synthesized in the liver and used in other tissues as alternative metabolic fuels?

a. Nitrogenous bases

b. Lipoproteins

c. Ketone bodies

d. Triacylglycerols

e. Biogenic amines

130. 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. Damage to elastic fibers

b. Atrophy of the muscular layer

c. Endovasculitis

d. Vascular neoplasms

e. -

131. The pregnant woman's condition was complicated by toxicosis. Laboratory testing detects ketonuria. What substance appeared in the patient's urine?

a. Urates

b. Lactate

c. Acetoacetate

d. Creatinine

e. Pyruvate

132. 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. Streptomycin sulfate

c. Gatifloxacin

d. Cycloserine

e. Isoniazid

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

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

b. Depth and frequency of respirations will decrease

c. Depth and frequency of respirations will increase

d. Respiration will remain unchanged

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

134. 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 regenerative left shift

b. Neutrophilia with right shift

c. Neutrophilic leukemoid reaction

d. Neutrophilia with degenerative left shift

e. Neutrophilia with hyperregenerative left shift

135. 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 dilator muscle, ciliary muscle

b. Iris sphincter and iris dilator muscles

c. Iris sphincter muscle, ciliary muscle

d. Superior oblique muscle, ciliary muscle

e. Lateral rectus muscle, iris sphincter muscle

136. 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. Hypophyseal nanism
- b. Cushing disease
- c. Acromegalia

d. Panhypopituitarism

e. Diabetes insipidus

137. 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-adrenoceptors

b. Muscarinic acetylcholine receptors

c. beta-adrenoceptors

d. alpha- and beta-adrenoceptors

e. Histamine H1 receptors

138. 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. Perform phage typing of the obtained strains

b. Determine the ability of the strains to produce toxins

c. Examine the kitchen equipment

d. Study the presence of antibodies in the sick children

e. Perform allergy testing

139. 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. Determination of toxin serotype

b. Analysis of antigenic properties

c. Determination of biochemical properties

d. Detection of toxigenicity

e. Pure culture isolation

140. 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. Fibronectin

b. Lysozyme

c. Secretory immunoglobulin A

d. Lactoperoxidase system

e. Interferon

141. 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. Atrial branches of the left coronary artery

b. Circumflex branch of the left coronary artery

c. Posterior interventricular branch of the right coronary artery

d. Anterior interventricular branch of the right coronary artery

e. Right coronary artery

142. 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. Gasping respiration

c. Biot respiration

d. Apneustic respiration

e. Cheyne-Stokes respiration

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

a. Fructosuria

b. Wilson's disease

c. Histidinemia

d. Maple syrup urine disease

e. Phenylketonuria

144. 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. Scarlet fever

b. Acute miliary tuberculosis

c. Measles

d. Hemorrhagic vasculitis

e. Meningococemia with Waterhouse-Friderichsen syndrome

145. 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. Postlysosomes

b. Mitochondria

c. Smooth endoplasmic reticulum

d. Centrosomes

e. Ribosomes

146. 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. Serous inflammation

b. Empyema

c. Chronic abscess

d. Acute abscess

e. Fibrinous inflammation

147. 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. Meningioma

b. Meningeal sarcoma

c. Neuroblastoma

d. Glioblastoma

e. Astrocytoma

148. 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. Lipoidosis

b. Atherocalcinosis

c. Atheromatosis

d. Liposclerosis

e. Ulceration

149. 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 sodium channels
- b. Blockade of energy production in the cell
- c. Inactivation of membrane calcium channels

d. Activation of membrane sodium channels

- e. Activation of membrane potassium channels

150. Biotin plays an important role in the metabolism of carbohydrates and lipids. In what type of reactions does it take part?

a. Carboxylation

- b. Hydroxylation
- c. Decarboxylation
- d. Transamination
- e. Deamination

151. 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. Decreased diuresis
- b. Decreased blood density
- c. Decreased ESR

d. Edema development

- e. Increased rate of diuresis

152. 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. Sulfotransferase
- b. Biliverdin reductase
- c. Heme oxygenase

d. UDP-glucuronyltransferase

- e. Heme synthetase

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

- a. Middle colic artery
- b. Celiac trunk

c. Inferior mesenteric artery

- d. Splenic artery
- e. Superior mesenteric artery

154. 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 transport systems in cell membranes
- b. Proton pump blockade
- c. Anti-enzymatic action
- d. Effect on ion channels in cell membranes

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

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

a. Trisomy 21

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

156. What changes in hemocoagulation processes will occur in a person, if activity of the sympathetic nervous system increases?

- a. Hemocoagulation will remain unchanged
- b. Hemocoagulation will decrease
- c. Fibrinolysis will decrease
- d. Anticoagulant system will activate
- e. Hemocoagulation will increase

157. 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 III
- b. All branches of the trigeminal nerve
- c. Trigeminal nerve, branch I
- d. Facial nerve (motor branches)**

e. Trigeminal nerve, branch II

158. 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. Muscular vein
- b. Lymph capillary

**c. Non-muscular vein**

- d. Hemocapillary
- e. Artery

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

160. 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. Immunofluorescence
- c. Agglutination
- d. Precipitation
- e. Complement fixation

161. A patient with obliterating endarteritis underwent ganglionic sympathectomy. What type of arterial hyperemia developed as a result of the surgery in this patient?

- a. Reactive
- b. Working
- c. Metabolic
- d. Neurotonic

**e. Neuroparalytic**

162. 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. Direction of atrial depolarization**

- b. Ventricular depolarization rate
- c. Mitral valve condition
- d. Pumping function of the left side of the heart
- e. Atrial depolarization rate

163. 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. Riboflavin
- b. Fatty acids

**c. Choline**

- d. Triacylglycerides
- e. Cholesterol

164. 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. Direct (conjugated) bilirubin

- b. Free amino acids
- c. Uric acid

d. Indirect (unconjugated) bilirubin

- e. Urea

165. 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. Streptococci

b. Candida

- c. Actinomycetales
- d. Streptobacteria
- e. Yersinia

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

- a. Nystatin
- b. Levomycetin (Chloramphenicol)
- c. Furazolidone

d. Mebendazole

- e. Tetracycline

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

- a. Dephosphorylation
- b. Acetylation
- c. Phosphorylation
- d. Methylation

e. Limited proteolysis

168. 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. Graves disease (toxic diffuse goiter)

b. Hashimoto thyroiditis (chronic lymphocytic thyroiditis)

- c. Papillary thyroid cancer
- d. Undifferentiated thyroid carcinoma
- e. Solid adenoma of the thyroid

169. 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. Ductus arteriosus

c. V. umbilicalis

- d. A) umbilicalis dextra
- e. A) umbilicalis sinistra

170. 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. Parathormone

- b. Thyroxine
- c. Vasopressin
- d. Aldosterone
- e. Thyrocalcitonin

171. An embryonic organ, in which the first blood corpuscles are formed, is being studied. Name this organ:

a. Yolk sac

- b. Thymus
- c. Spleen



- d. Liver
- e. Red bone marrow

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

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

173. 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. Increased blood volume
- b. Edema**
- c. Increased blood density
- d. Reduced diuresis
- e. Reduced ESR

174. 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. Galactosemia**
- b. Disaccharide intolerance
- c. Porphyria
- d. Phenylketonuria
- e. Hypovitaminosis D

175. 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. *Musca domestica*
- b. *Triatominae*
- c. *Stomoxys calcitrans*
- d. *Glossina* (Tsetse fly)
- e. *Wohlfahrtia magnifica***

176. Autopsy of the body of 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. Peripheral cancer
- b. Encapsulated primary affect**
- c. Organizing pulmonary infarction
- d. Fibroma
- e. Chondroma

177. Radioactive isotope of phosphorus was introduced into the system of artificial cell culture. What organic substances can accumulate this isotope?

- a. Triglycerides
- b. Nucleic acids**
- c. Amino acids
- d. Polysaccharides
- e. Disaccharides

178. 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. Activation of succinate dehydrogenase
- b. Local tissue acidosis**
- c. Inhibition of oxidative phosphorylation
- d. Local tissue alkalosis

e. Inhibition of carbonic anhydrase

179. 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. Significantly inhibited

d. Significantly increased

e. Moderately inhibited

180. 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. Dysfunctional atrophy

b. Atrophy caused by pressure

c. Senile atrophy

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

e. Hypoplasia

181. 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. Biceps femoris muscle

b. Semitendinosus muscle

c. Piriformis muscle

**d. Quadriceps femoris muscle**

e. Quadratus lumborum muscle

182. 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  $38^{\circ}\text{C}$ . 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. Chronic suppurative mastitis

d. Acute serous mastitis

e. Acute apostematous mastitis

183. Obturation of the patient's bile duct resulted in decreased bile flow into the duodenum, which, in turn, caused problems with absorption of:

a. Proteins

b. Proteins and carbohydrate

c. Carbohydrates

d. Mineral salts

**e. Lipids**

184. A patient in the infectious diseases unit presents with elevated temperature up to  $39^{\circ}\text{C}$ . 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

b. Conductivity and rhythm assimilation

c. Automatism and conductivity

**d. Automatism**

e. Rhythm assimilation

185. 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. Increased IgA, IgM

b. No changes

- c. Decreased IgD, IgE
- d. Increased IgD, IgE

e. Decreased IgA, IgM

186. 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. Too much water
- c. Not enough fats
- d. Not enough fats and proteins
- e. Too much carbohydrates

187. 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. Pineal gland
- d. Adrenal cortex

e. Parathyroid glands

188. 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. IgM and IgG

- b. IgA and IgG
- c. IgG and IgD
- d. IgM and IgD
- e. IgA and IgD

189. What type of ventilatory failure is characteristic of pneumothorax?

a. Restrictive

- b. Pathologic
- c. Obstructive
- d. Mixed
- e. Disregulatory

190. 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. Increased number of isogenous groups

c. Deposition of calcium salts in the intercellular substance

- d. Increased number of cartilage cells
- e. Increased hydrophilicity of the basal substance

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

- a. Placental gamma globulin
- b. Interferon
- c. Monovalent antitoxic serum
- d. Anatoxin

e. Polyvalent antitoxic serum

192. 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. Macrocytosis
- c. Anulocytosis
- d. Agranulocytosis

e. Microspherocytosis

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

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

195. A patient is diagnosed with an acute necrotizing pancreatitis. What peritoneal cavity will be immediately exposed to exudate?

- a. Bursa subhepatica
- b. Canalis lateralis dexter
- c. Canalis lateralis sinister
- d. Bursa omentalis**
- e. Bursa pregastrica

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

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

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

198. 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. Chlamidia trachomatis
- b. Candida albicans
- c. Calymmatobacterium granulomatis
- d. Haemophilus vaginalis
- e. Neisseria gonorrhoeae**

199. 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. Reflex excitation of the respiratory center
- b. Competition for binding to opioid receptors**
- c. Sharp acceleration of morphine metabolism
- d. Decreased sensitivity of the body to morphine
- e. Direct stimulation of the respiratory center

200. 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. Lateral umbilical ligament

**b. Proper ovarian ligament**

c. Round ligament of the uterus

d. Broad ligament of the uterus

e. Suspensory ligament of the ovary

201. A 50-year-old woman developed hemolytic anemia after mushroom poisoning. Where will the hemolysis of erythrocytes primarily occur in this case?

a. Kidneys

b. Liver and spleen

**c. Bloodstream**

d. Bone marrow

e. Lymphoid tissue

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

a. Tricarboxylic acid cycle

**b. Biosynthesis of higher fatty acids**

c. Decarboxylation of amino acids

d. Hydroxylation of proline

e. Transamination of acids

203. 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. Inspiratory reserve volume will increase

c. Lung dead space will increase in volume

**d. Vital capacity of the lungs will decrease**

e. Residual volume will increase

204. 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. Liver

b. Pancreas

c. Kidneys

**d. Heart**

e. Skeletal muscles

205. 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. Renin

b. Angiotensin I

c. Angiotensinogen

d. Noradrenaline

**e. Angiotensin II**

206. 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. Staphylococci

c. Actinomyces

d. Tetracocci

**e. Candida fungi**

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

**a. Rectum**

b. Colon descendens

c. Caecum

d. Colon transversum

e. Colon sigmoideum

208. 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. Dysplasia

b. Epithelial hyperplasia

c. Metaplasia

d. Leukoplakia

e. Epithelial hypertrophy

209. 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. Acetylation

b. C-peptide detachment

c. Phosphorilation

d. Formation of several subunits

e. Prosthetic group binding

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

a. Fibrinogen

b. Vitamin K

c. Calcium ions

d. Sodium ions

e. Prothrombin

211. 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. Biliverdine

b. Melanin

c. Porphyrin

d. Lipofuscin

e. Hemosiderin

212. 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. Earth's gravity

b. Ultraviolet radiation level

c. Partial pressure of oxygen in air

d. Temperature

e. Humidity level

213. 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. Sex-linked dominant

b. Y-linked

c. Sex-linked recessive

d. Autosomal dominant

e. Autosomal recessive

214. 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. Lymphocytosis

b. Monocytosis

c. Eosinophilia

d. Basophilia

e. Neutrophilia

215. A woman presents with weight loss, exophthalmos, 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. Adrenal insufficiency
- c. Hypothyroidism
- d. Hyperthyroidism**

e. Diabetes mellitus

216. 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. Phenylalanine
- b. Hydroxyproline**

c. Proline  
d. Glycine  
e. Lysine

217. 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. Cholera**

d. Salmonellosis  
e. Crohn disease

218. 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. Chlordiazepoxide
- b. Diazepam
- c. Aminazine (Chlorpromazine)**
- d. Sydnocarb (Mesocarb)
- e. Diphenine (Phenytoin)

219. 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. Louis-Barr syndrome**
- b. Wiskott-Aldrich syndrome
- c. Klinefelter syndrome
- d. Turner syndrome
- e. Down syndrome

220. 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. Proteins
- b. Lipids**
- c. Water
- d. Carbohydrates
- e. Hormones

221. Histone protein synthesis is artificially blocked in a cell. What cell structure will be damaged as a result?

- a. Cell membrane
- b. Nuclear chromatin**
- c. Nuclear membrane
- d. Nucleolus
- e. Golgi apparatus

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

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

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

- a. Pulmonary valve
- b. Aortic valve**
- c. Mitral valve
- d. Tricuspid valve
- e. -

224. An oligomycin antibiotic inhibits ATP synthase. In what process does this enzyme take part?

- a. Nucleic acid synthesis
- b. Protein synthesis
- c. Tricarboxylic acid cycle
- d. Oxidative phosphorylation**
- e. Substrate-level phosphorylation

225. 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. Tocopherol acetate
- b. Nicotinamide
- c. Cyanocobalamin
- d. Retinol acetate**
- e. Thiamine

226. 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. Differentiation
- b. Apoptosis
- c. Physiological regeneration**
- d. Reparative regeneration
- e. Adaptation

227. 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. Spongy
- b. Membranous**
- c. Proximal
- d. Distal
- e. Prostatic

228. 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. Membrane phospholipid defect
- b. Hyaluronic acid destruction
- c. Neuraminic acid elimination
- d. Adenylate cyclase activation**
- e. Mucin destruction

229. 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. Renin
- b. Urokinase



- c. Prostaglandins
- d. Vitamin D<sub>3</sub>

**e. Erythropoietin**

230. 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. Damage to the medulla oblongata**

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

231. A patient developed immune hemolytic anemia. What substance will be present in an increased concentration in the patient's blood serum?

a. Mesobilinogen

**b. Indirect bilirubin**

- c. Stercobilinogen
- d. Protoporphyrin
- e. Direct bilirubin

232. 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<sub>1</sub>-adrenergic receptors**

- c. Blockade of nicotinic acetylcholine receptors
- d. Stimulation of beta<sub>1</sub>-adrenergic receptors
- e. Blockade of beta<sub>2</sub>-adrenergic receptors

233. 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. Bronchopneumonia

**b. Croupous pneumonia**

- c. Pneumofibrosis
- d. Tuberculosis
- e. Interstitial pneumonia

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

**a. Increases water reabsorption**

- b. Decreases calcium reabsorption
- c. Decreases water reabsorption
- d. Increases sodium reabsorption
- e. Increases calcium reabsorption

235. 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. Adrenocorticotrophic hormone
- b. Insulin

**c. Prolactin**

- d. Somatostatin
- e. Glucagon

236. 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. Cholinesterase inhibitors**

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

237. 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. Indican**

c. Urea

d. Uric acid

e. Creatinine

238. 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. Golgi apparatus

b. Mitochondria

**c. Lysosomes**

d. Granular endoplasmic reticulum

e. Ribosomes

239. 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. Hepatic coma

b. Hyperglycemic coma

c. Hyperosmolar coma

**d. Ketoacidotic coma**

e. Hypoglycemic coma

240. 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 A

**b. Vitamin PP**

c. Vitamin B<sub>2</sub>

d. Vitamin B<sub>1</sub>

e. Vitamin C

241. 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. Fibrinolysin

b. Opsonin

c. Complement

**d. Lysozyme**

e. Hyaluronidase

242. 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. Acute superficial

**d. Acute gangrenous**

e. Chronic

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

a. Baroreceptors

b. Chemoreceptors

c. Exteroreceptors

d. Visceroreceptors

**e. Proprioceptors**

244. 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. Keratoacanthoma
- b. Hypertrophic glossitis
- c. Avitaminosis A

**d. Leukoplakia**

- e. Chronic stomatitis

245. 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. Dobutamine**
- b. Euphyllin (Aminophylline)
- c. Caffeine
- d. Adrenaline
- e. Isadrine (Isoprenaline)

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

247. 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.  $AMP+ADP$

**c. P/O**

- d.  $CO_2/O_2$
- e.  $ATP/ADP$

248. A 12-year-old boy with clinical presentation of influenza has developed respiratory mycoplasmosis. What type of infection has developed under these conditions?

- a. Autoinfection
- b. Relapse

**c. Mixed infection**

- d. Superinfection
- e. Iatrogenic infection

249. 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. Decrease of osmotic pressure
- c. Inhibition of intestinal motility

**d. Increase of intestinal osmotic pressure**

- e. Stimulation of gastric juice secretion

250. 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. popliteum obliquum

**b. Lig. collaterale fibulare**

- c. Lig. popliteum arcuatum
- d. Lig. patellae
- e. Lig. collaterale tibiale

251. 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. Cystine
- b. Taurine
- c. Serine
- d. Cysteine

**e. Homocysteine**

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

**e. Hepatoduodenal ligament**

253. 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. Croupous pneumonia**
- b. Caseous pneumonia
- c. Primary pulmonary tuberculosis
- d. Interstitial pneumonia
- e. Focal pneumonia

254. 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. Atropine
- b. Sulfacyl-sodium (Sulfacetamide)
- c. Platyphylline hydrotartrate

**d. Pilocarpine hydrochloride**

e. Anaprilin (Propranolol)

255. 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. Glomerulonephritis
- d. Nephroblastoma

**e. Secondary amyloidosis**

256. 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. Carbohydrate hydrolysis
- d. Vitamin absorption
- e. Lipid hydrolysis

257. 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**

258. 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. One
- b. None
- c. Two
- d. Many
- e. Three

259. 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. Adenylate cyclase
- b. Tyrosine kinase
- c. Protein kinase
- d. Guanylate cyclase
- e. Phospholipase C

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

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

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

262. 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. Glutamine
- b. Tyrosine
- c. Phenylalanine
- d. Proline
- e. Serine

263. 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. Lactate dehydrogenase
- b. Alanine aminotransferase
- c. Creatine phosphokinase
- d. Aspartate aminotransferase
- e. Alpha-amylase

264. 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. Nucleic acid synthesis
- b. Detoxication of harmful substances
- c. Intracellular digestion
- d. Protein synthesis
- e. Formation of maturation spindle

265. 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. Oxidation of glucose to end products

- b. Energy generation
- c. Neutralization of xenobiotics

**d. Generation of NADPH<sub>2</sub>**

- e. Production of ribose phosphates

266. 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. Doxycycline hydrochloride
- d. Gentamycin sulfate

**e. Benzylpenicillin sodium salt**

267. Abdominal cavity revision detected a venous bleeding from the hepatoduodenal ligament. What vein is damaged?

- a. Superior mesenteric vein
- b. Inferior vena cava

**c. Hepatic portal vein**

- d. Inferior mesenteric vein
- e. Splenic vein

268. 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. Hemoxygenase
- b. Indirect hemoglobin
- c. Biliverdin

**d. UDP-glucuronyltransferase**

- e. Verdoglobulin

269. In the 1970s scientists determined that severe cases of neonatal jaundice are caused by disturbed conjugation of bilirubin in hepatocytes. What substance is used for conjugate formation?

**a. Glucuronic acid**

- b. Uric acid
- c. Lactic acid
- d. Sulfuric acid
- e. Pyruvic acid

270. 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 folic acid levels
- b. Increased secretion of Castle's intrinsic factor
- c. Decreased folic acid levels

**d. Decreased secretion of Castle's intrinsic factor**

- e. Decreased copper absorption

271. 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. Mitotic activity of nuclei

**b. Karyorrhexis**

- c. Karyopyknosis
- d. Karyolysis
- e. Apoptosis

272. 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. Exacerbation of chronic infectious processes
- b. Ulceration of gastric and duodenal mucosa

**c. Withdrawal syndrome**

- d. Increased blood pressure

e. Hyperglycemia

273. 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. Serological

b. Microscopy

c. Bacteriological

d. Biological

e. Allergy testing

274. 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 dehydration

b. Hypoosmolar hyperhydration

c. Hyperosmolar hyperhydration

d. Isoosmolar dehydration

e. Isoosmolar hyperhydration

275. 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. Sinoatrial block

b. Third-degree atrioventricular block

c. Wolff-Parkinson-White syndrome

d. Second-degree atrioventricular block

e. First-degree atrioventricular block

276. 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 catecholamines

b. Hyperaldosteronism

c. Hypoaldosteronism

d. Hypersecretion of glucocorticoids

e. Hyposecretion of glucocorticoids

277. 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 lymphocytic leukemia

b. Generalized lymphogranulomatosis

c. Chronic myeloid leukemia

d. Acute myeloblastic leukemia

e. Acute lymphoblastic leukemia

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

a. I (O) Rh-

b. IV (AB) Rh-

c. III (B) Rh+

d. IV (AB) Rh+

e. I (O) Rh+

279. 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. Gastrixin

- b. Pepsin
- c. Renin

**d. Lactate**

- e. Pyruvate

280. 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. Riboflavin
- b. Cobalamin
- c. Retinol
- d. Niacin

**e. Thiamine**

281. 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. Activation of homogentisic acid oxidase

**b. Activation of tyrosinase**

- c. Inhibition of tyrosinase
- d. Inhibition of homogentisic acid oxidase
- e. Inhibition of phenylalanine hydroxylase

282. 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. Closing plate of the decidua basalis

**b. Hemochorial barrier**

- c. Fibrinoid oxyphilic mass (Langhans fibrinoid)
- d. Rohr amorphous fibrinoid
- e. Connective tissue septa

283. 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. Accelerated leukocyte exit from the bone marrow

**b. Redistribution of leukocytes in the body**

- c. Intensification of leukopoiesis
- d. Decelerated leukocyte extravasation
- e. Decreased leukocyte destruction

284. A man presents with convergent strabismus. What muscle of the eyeball is damaged in this case?

- a. Musculus rectus oculi inferior
- b. Musculus rectus oculi lateralis
- c. Musculus obliquus oculi superior

**d. Musculus rectus oculi medialis**

- e. Musculus rectus oculi superior

285. 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. Athetosis
- c. Hypokinesia

**d. Neurosis**

- e. Paresis

286. 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. Intensive oxidation of lung surfactant**

- b. Fibrosis



- c. Inflammatory process
- d. Blood stasis in the lungs
- e. Atelectasis

287. 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. Diastolic cardiac arrest
- b. Increased cardiac contraction frequency
- c. Increased cardiac contraction force
- d. Increased cardiac contraction force and frequency**
- e. Decreased cardiac contraction force

288. 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. Latum uteri
- b. Lig. Cardinali
- c. Lig. Suspensorium ovarii
- d. Lig. Ovarii proprium**
- e. Lig. Umbilicale laterale

289. 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. Left shift
- b. Eosinophilia**
- c. Leukocytosis
- d. Basophilia
- e. Leukopenia

290. 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. Ascariasis
- d. Enterobiasis
- e. Dracunculiasis**

291. 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 anterior
- b. A) basilaris**
- c. A) carotis interna
- d. A) communicans posterior
- e. A) cerebri media

292. 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. Alcohol dehydrogenase
- c. Pyruvate dehydrogenase**
- d. Hexokinase
- e. Transaminase

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

- a. Vasopressin
- b. Endorphins**
- c. Statins

- d. Oxytocin
- e. Liberins

294. What will be caused by stimulation of the carotid sinus baroreceptors in an experiment on a dog?

- a. Decreased cardiac output
- b. Increased parasympathetic tone**
- c. Increased cardiac output
- d. Increased heart rate
- e. Increased sympathetic tone

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

296. 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. Neurohypophysis
- d. Adrenal glands
- e. Gonads

297. A patient has inner ear damage of vascular genesis. What artery supplies the inner ear with blood through its branches?

- a. A. vertebralis
- b. A. cerebri media
- c. A. basilaris**
- d. A. cerebri anterior
- e. A. cerebri posterior

298. 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 oxyhemoglobin formation
- b. Stimulates tissue respiration
- c. Stimulates carbhemoglobin formation
- d. Stimulates oxidative phosphorylation
- e. Stimulates oxyhemoglobin dissociation**

299. 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. Balantidiasis
- b. Amoebiasis
- c. Trichomoniasis
- d. Giardiasis
- e. Malaria**

300. 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. Mitosis**
- b. G0 phase
- c. Postsynthetic phase
- d. Presynthetic phase
- e. Synthetic phase

301. 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. Gasping respiration**
- c. Cheyne-Stokes respiration
- d. Apneustic respiration
- e. Kussmaul respiration

302. 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. Citrate
- c. Ketoglutarate
- d. Malate
- e. Succinyl-CoA

303. 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. Glycerol-phosphate dehydrogenase
- b. Glycogen phosphorylase
- c. Glucose 6-phosphatase
- d. Glucose 6-phosphate dehydrogenase**
- e. Gamma-glutamyl transferase

304. 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. Myxedema**
- b. Cretinism
- c. Diffuse toxic goiter
- d. Thyrotoxicosis
- e. Thyroprival cachexia

305. During the generation of action potential in the nerve fiber of a living cell, ATP energy is used for:

- a. Activation of sodium channels
- b. Restoration of ionic asymmetry**
- c. Inactivation of sodium channels
- d. Inactivation of potassium channels
- e. Activation of potassium channels

306. 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. Legionella pneumophila
- b. Streptococcus pneumoniae
- c. Mycoplasma pneumoniae**
- d. Chlamidia pneumoniae
- e. Klebsiella pneumoniae

307. Two weeks after a blood transfusion, the recipient developed a fever. What protozoan disease can the doctor suspect in this case?

- a. Toxoplasmosis
- b. Malaria**
- c. Trypanosomosis
- d. Amoebiasis
- e. Leishmaniasis

308. 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. Reduced sensitivity of adrenergic receptors
- b. Allergy
- c. Tachyphylaxis
- d. Enzyme induction

**e. Material cumulation**

309. 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. Cytolysis of blood cells
- b. Degranulation of tissue basophils
- c. Activation of T-killers

**d. Accumulation of circulating immune complexes in the blood**

**e. Activation of macrophages**

310. 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. Principle of dominance
- b. Temporal summation of excitation
- c. Recirculation of excitation
- d. Excitation radiation by divergent nerve circuits

**e. Spatial summation of excitation**

311. 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. Proteoglycan breakdown
- d. Activation of hyaluronidase

**e. Collagen synthesis**

312. Surfactant synthesis is impaired in premature newborns. What is its function in the lungs?

**a. Reduces the surface tension of the alveolar walls**

- b. Facilitates diaphragmatic excursion
- c. Increases the surface tension of the alveolar walls
- d. Impairs the O<sub>2</sub> diffusion through the aerogematic barrier
- e. Increases the airway resistance

313. 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. Ethambutol
- b. Ethionamide
- c. Streptomycin sulfate
- d. Isoniazid

**e. Rifampicin**

314. A man has a vitamin D deficiency, which causes the malabsorption of:

- a. Chlorine
- b. Water
- c. Iron
- d. Sodium

**e. Calcium**

315. 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. Wilson disease**

- b. Tay-Sachs disease

- c. Niemann-Pick disease
- d. Marfan syndrome
- e. Gilbert syndrome

316. 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. Succinate
- c. Alanine
- d. Acetate
- e. Aspartate

317. 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. Exogenous intoxication
- c. Hemorrhagic diathesis
- d. Platelet production disorder
- e. Autoimmune thrombocytopenia

318. 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. B<sub>6</sub>

- c. B<sub>12</sub>
- d. PP
- e. B<sub>2</sub>

319. A person has a wound in the abdomen in the right. What part of the colon is most likely to be damaged?

a. Rectum

b. Ascending colon

- c. Sigmoid colon
- d. Transverse colon
- e. Descending colon

320. 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 vasopressin production
- b. Increased activity of sympathetic nervous system
- c. Hyperfunction of the heart

d. Activation of renin-angiotensin- aldosterone system

e. Increased volume of circulating blood

321. 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. Levomycetin (Chloramphenicol)
- c. Tetracycline
- d. Biseptol (Co-trimoxazole)

e. Benzylpenicillin

322. 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. Reduction of myocardial energy consumption due to reduced load
- b. Decreased myocardial oxygen demand and increased oxygen supply to the myocardium
- c. Reduction of oxidative metabolism in the myocardium due to blockade of the Krebs cycle enzymes
- d. Increased oxygen supply to the myocardium

e. Beta-adrenergic receptor block and a decrease in myocardial oxygen demand

323. A patient diagnosed with polyneuropathy was prescribed vitamin B<sub>1</sub>. Name the coenzyme form

of this vitamin:

- a. Tetrahydrofolate
- b. Thiamine diphosphate**
- c. Pyridoxal phosphate
- d. Flavin adenine mononucleotide
- e. Nicotinamide adenine dinucleotide phosphate

324. 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. Furazolidone
- b. Linex
- c. Rehydron
- d. Loperamide**
- e. Omnopon (Papaveretum)

325. 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. DiGeorge syndrome**
- b. Louis-Bar syndrome (ataxia- telangiectasia)
- c. Wiskott-Aldrich syndrome
- d. Bruton syndrome
- e. Good syndrome

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

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

- a. Pyruvate dehydrogenase
- b. NAD<sup>+</sup>-dehydrogenase
- c. RNA polymerase
- d. ATP synthase**
- e. ADP-ribosyl transferase

328. 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. Atelectasis
- b. Hemorrhage
- c. Carnification
- d. Gangrene
- e. Hemorrhagic infarction**

329. 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. Transverse heart block
- b. Paroxysmal tachycardia
- c. Ciliary arrhythmia**
- d. Extrasystole
- e. Respiratory arrhythmia

330. 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. Glutamate

b. Arginine

c. Glutamine

d. Asparagine

e. Aspartate

331. 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. Exogenous infection

d. Relapse

e. Autoinfection

332. 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, hypochloremia, 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. Spironolactone

c. Metoprolol

d. Losartan

e. Amlodipine

333. In an experiment, calcium ions were pumped from the synaptic cleft. What effect will it have on the neuromuscular transmission?

a. Hyperpolarization of the end plate will occur

b. The release of the mediator into the synaptic cleft will increase

c. Action potential of the end-plate will be generated

d. Depolarization of the end-plate will occur

e. The release of the mediator into the synaptic cleft will decrease

334. 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. Chondrosarcoma

b. Fibrous dysplasia of bone

c. Chronic osteomyelitis

d. Adenocarcinoma metastasis

e. Myeloma disease

335. 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. Pseudotuberculosis

b. Cholera

c. Salmonellosis

d. Intestinal yersiniosis

e. Shigellosis

336. 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 precentralis

b. Gyrus temporalis superior

c. Gyrus parietalis superior

d. Gyrus angularis

**e. Gyrus supramarginalis**

337. 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. Thiamine
- b. Cobalamin
- c. Folic acid
- d. Biotin

**e. Pyridoxine**

338. In the lungs, an enzyme breaks down carbonic acid ( $H_2CO_3$ ) into water and carbon dioxide that is released with the air. What enzyme catalyzes this reaction?

- a. Catalase
- b. Carbonic anhydrase**
- c. Peroxidase
- d. Cytochrome oxidase
- e. Cytochrome

339. 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. Aldosterone
- b. Atrial natriuretic hormone**
- c. Vasopressin
- d. Adrenaline
- e. Thyroxine

340. The laboratory has received a sample of digestive juice for analysis. Its pH is 2.2. Name this digestive juice:

- a. Saliva
- b. Bile
- c. Pancreatic juice
- d. Gastric juice**
- e. Intestinal juice

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

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

342. 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. Visceromotor**

- c. Viscerodermal
- d. Dermatovisceral
- e. Viscerovisceral

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

344. A person at rest presents with significantly increased work of the inspiratory muscles. What can cause this phenomenon?

- a. Shallow breathing
- b. Slow breathing



c. Narrowing of the respiratory tract

d. Reduced minute ventilation

e. Negative intrapleural pressure

345. 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. Innate readiness to act

c. Tonic influence of the limbic structures and neocortex

d. Antagonistic reflex on the part of extended lower limbs

e. Reflex from muscle spindles when stretching the biceps muscle

346. 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. Lipooxygenase

b. Cyclooxygenase

c. Phospholipase C

d. Guanylate cyclase

e. Adenylate cyclase

347. A 45-year-old woman has breast cancer. Metastases can spread in this case to the following regional lymph nodes:

a. Aortic, bronchomediastinal

b. Abdominal, cervical

c. Axillary, parasternal

d. Parasternal, bronchomediastinal

e. Cervical, parasternal

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

a. Disturbed pulmonary perfusion

b. Decreased pulmonary ventilation

c. Disturbed humoral regulation of external respiration

d. Decreased gas diffusion

e. Disturbed nervous regulation of external respiration

349. 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. Significant reticulocytosis

b. Poikilocytosis

c. Hypochromia

d. Anisocytosis

e. Erythropenia

350. Based on the clinical data, the patient was provisionally diagnosed with acute pancreatitis. What biochemical test can confirm this diagnosis?

a. Blood creatinine levels

b. Acid phosphatase activity in blood

c. Blood amylase activity

d. Blood aminotransferase activity

e. Alkaline phosphatase activity in blood

351. 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. Potassium influx to the cell increases and local response develops

b. Potassium efflux from the cell decreases and hyperpolarization develops

c. Sodium efflux from the cell increases and depolarization develops

d. Potassium efflux from the cell stops and resting potential disappears

e. Potassium efflux from the cell increases and hyperpolarization develops

352. A patient was prescribed a synthetic antiprotozoal agent that is an imidazole derivative for the

treatment of giardiasis (lambliasis). 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. Metronidazole
- b. Tetracycline
- c. Furazolidone
- d. Chingamine (Chloroquine)
- e. Methacycline

353. 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

354. 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. Immunity activation
- b. Deceleration of leukocyte migration to the tissues
- c. Decreased leukocyte disintegration
- d. Leukocyte redistribution

e. Intensification of leukopoiesis

355. 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. Xeroderma
- b. Erythroplakia

c. Ichthyosis

- d. Dermatomyositis
- e. Leukoplakia

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

357. 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 distal tubules
- d. Cells of nephron loop
- e. Cells of macula densa

358. Against the background of an allergic reaction, a child has developed laryngeal edema. What type of respiratory failure developed in this case?

- a. Dysregulatory type
- b. Obstructive type
- c. Restrictive type
- d. Perfusion failure
- e. Diffusion failure

359. 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. Fatty heart

- d. -
- e. Cardiac obesity

360. 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. Phenylalanine hydroxylase
- b. BB-type creatine phosphokinase
- c. Decarboxylase of cyclic amino acids
- d. Alanine transaminase

e. Monoamine oxidase

361. 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. Liver
- b. Submandibular salivary gland
- c. Parotid salivary gland

d. Pancreas

- e. Sublingual salivary gland

362. 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. Chemical fertilizers

b. Exhaust fumes

- c. Herbicides
- d. Acid rains
- e. Sewage

363. 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. Hypertensive disease
- b. Endocrine hypertension
- c. Essential hypertension

d. Renal hypertension

- e. Primary hypertension

364. A certain natural antioxidant is used in treatment of parodontosis. Which of the listed natural compounds is used as an antioxidant?

- a. Pyridoxine
- b. Gluconate
- c. Choline

d. Tocopherol

- e. Thiamine

365. 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. beta\_1 adrenergic receptors
- b. L-type  $\text{Ca}^{2+}$  channels
- c. Fast  $\text{Na}^{+}$  channels

d. alpha\_1 adrenergic receptors

**e. Muscarinic acetylcholine receptors**

366. An extrasystole caused by excitation in one of the ventricles leads to:

- a. Increased rate of excitation conduction in the ventricles
- b. Complete block of excitation conduction in the ventricles
- c. Compensatory pause of the atria
- d. Decreased rate of excitation conduction in the atria

**e. Prolonged compensatory pause of the ventricle**

367. 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. Tuberculosis**

- b. Lymphocytic leukemia
- c. -
- d. Lymphosarcoma
- e. Lymphogranulomatosis

368. A patient with arterial hypertension and signs of angina pectoris was prescribed an antianginal drug that is a calcium antagonist. Name this drug:

a. Metoprolol

**b. Amlodipine**

- c. Molsidomine
- d. Anaprilin (Propranolol)
- e. Pentoxifylline

369. A man has tissue ischemia below the knee joint, accompanied by intermittent claudication. What artery is likely to be occluded in this case?

a. Descending genicular artery

**b. Popliteal artery**

- c. Proximal femoral artery
- d. Dorsalis pedis artery
- e. Deep femoral artery

370. A 40-year-old person developed elevated blood pressure after an emotional excitement. What is the likely cause of this effect?

- a. Arteriolar dilation
- b. Increased parasympathetic nervous system tone
- c. Hyperpolarization of cardiomyocytes
- d. Decreased cardiac contraction frequency

**e. Increased sympathetic nervous system tone**

371. 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. Contraction
- b. Excitation
- c. Repolarization
- d. Relaxation

**e. Depolarization**

372. 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. Retina**

- c. Vascular membrane
- d. Iris
- e. Sclera

373. 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. Exocytosis
- b. Pinocytosis
- c. Osmosis
- d. Endocytosis
- e. Facilitated diffusion

374. 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. Crigler-Najjar syndrome
- b. Mechanical jaundice
- c. Parenchymatous jaundice
- d. Gilbert syndrome
- e. Hemolytic jaundice

375. 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. Anthrax
- b. Tularemia
- c. Plague
- d. Furuncle
- e. Phlegmon of the neck

376. 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. Syphilis
- b. Lymphogranuloma venereum

c. Gonorrhea

- d. Melioidosis
- e. Candidiasis

377. 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 systemic arterial pressure
- b. Increased filtration coefficient
- c. Decreased oncotic plasma pressure
- d. Increased permeability of the renal filter
- e. Increased renal plasma flow

378. 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. triceps surae
- b. M. extensor digitorum longus

c. M. quadriceps femoris

- d. M. peroneus longus
- e. M. tibialis anterior

379. 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. Repair
- b. Maturation
- c. Proliferation

- d. Apoptosis
- e. Differentiation

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

381. 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. Tunica albuginea
- b. Tunica vaginalis**
- c. External spermatic fascia
- d. Internal spermatic fascia
- e. Tunica dartos

382. 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. Hemostatic system
- d. Renin-angiotensin system**
- e. Sympathoadrenal system

383. 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. Thinning of the cicatricially-changed stomach wall with formation of an aneurysm
- b. Autolytic processes with pathologic softening of myocardial tissue (myomalacia)**
- c. Scar formation with thinning of the wall of the left cardiac ventricle
- d. Increased pressure in the pulmonary circulation
- e. Replacement with connective tissue with a decrease in myocardial elasticity

384. 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. Methemoglobin
- c. Deoxyhemoglobin
- d. Carbaminohemoglobin
- e. Carboxyhemoglobin

385. 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. Oxidoreductase
- b. Catalase
- c. Plasma coagulase
- d. Hyaluronidase**
- e. Lactase

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

387. 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. Infiltrating lobular cancer
- b. Simple (usual) ductal hyperplasia

**c. Paget's cancer**

- d. Medullary cancer
- e. Adenofibroma

388. 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. Reverse indirect hemagglutination
- b. Precipitation reaction
- c. Vidal's reaction
- d. Agglutination reaction

**e. Enzyme immunoassay**

389. 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. Hemosiderin

**c. Lipofuscin**

- d. Hemozoin (malarial pigment)
- e. Hematoidin

390. 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. Right ventricle
- b. Left atrium
- c. All heart chambers

**d. Left ventricle**

- e. Right atrium

391. 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. Contrykal (Aprotinin)**

- b. Pancreatin
- c. Chymotrypsin
- d. Fibrinolysin
- e. Trypsin

392. 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. Natriuretic hormone
- b. Aldosterone

**c. Vasopressin**

- d. Adrenaline
- e. Calcitonin

393. 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 styloideus
- b. Processus pterygoideus
- c. Processus zygomaticus
- d. -

**e. Processus mastoideus**

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

- a. Antituberculosis
- b. Antisiphilitic
- c. Antimycotic
- d. Antihelminthic

e. Antimalarial

395. Clinical course of urolithiasis was complicated by the passage of a renal calculus. Where in the ureter is it most likely to stop?

- a. In the middle of the abdominal segment
- b. In the renal pelvis
- c. 5 cm above the pelvic segment

d. At the border between the abdominal and pelvic segments

e. 2 cm above the entrance to the urinary bladder

396. 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. Plasma cells

- b. T-helpers
- c. Plasmablasts
- d. T-suppressors
- e. T-killers

397. 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. N<sub>2</sub>

c. O<sub>2</sub>

d. CO<sub>2</sub>

e. NO<sub>2</sub>

398. 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. Somatoform autonomic dysfunction

b. -

c. Essential hypotension

d. Chronic hypotension

e. Acute hypotension

399. 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. Methionine

- b. Ethanolamine
- c. Glycerin
- d. Cysteine
- e. Calcium

400. Excessive formation of free radicals leads to cell damage. Name the non-enzymatic factor of the cellular antioxidant defense system.

- a. Cyanocobalamin
- b. Glutathione reductase
- c. Superoxide dismutase

d. Vitamin E

e. Glucuronidase

401. 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 S

b. Hemoglobin F



- c. Methemoglobin
- d. Hemoglobin A1
- e. Hemoglobin C

402. 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. Neisser
- b. Kozlovsky
- c. Romanowsky
- d. Loeffler
- e. Ziehl-Nielsen

403. 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. Prozerin (Neostigmine)

- c. Morphine
- d. Omeprazole
- e. Furosemide

404. 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. Glycosylation of proteins in the crystalline lens and accumulation of sorbitol
- c. NADPH2 deficiency and inhibition of fatty acid synthesis
- d. Cellular dehydration
- e. Disturbed insulin-receptor binding

405. 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. Acetylation
- b. Phosphorylation
- c. Methylation
- d. Glycosylation

- e. Iodination

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

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

- e. Facial nerve

407. 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. IgD

- c. IgM

- d. IgA
- e. IgG

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

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

410. 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. Increased AMP levels in muscles
- b. Separation of biological oxidation and oxidative phosphorylation
- c. Increased levels of ADP and  $H_3PO_4$
- d. Accumulation of end products of metabolism in muscles
- e. Heart failure

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

- a. Muscle spindles
- b. Articular receptors
- c. Nociceptors
- d. Golgi tendon organ
- e. Tactile receptors

412. Unlike the nerve cells that do not reproduce, the stem cell can regenerate multiple times. The process of repeated cell regeneration is called:

- a. Hypertrophy
- b. Proliferation
- c. Differentiation
- d. Apoptosis
- e. Atrophy

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

414. 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. Heart
- d. Intestine
- e. Adrenal glands

415. 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. Tissue basophils
- b. Fibroblasts
- c. Macrophages
- d. Eosinophils
- e. Plasma cells

416. A 60-year-old man complains of joint pain. Increased levels of C-reactive protein and oxypoline were detected in his blood serum. What disease can be characterized by these symptoms?

- a. Hepatitis
- b. Diabetes mellitus
- c. Jaundice

**d. Rheumatism**

**e. Gout**

417. 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. Amyloidosis**

**c. Acute pyelonephritis**

**d. Hydronephrosis**

**e. Acute glomerulonephritis**

418. 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. Brain**

**b. Liver**

**c. Stomach**

**d. Kidneys**

**e. Thyroid gland**

419. 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 intersects the kidney in the upper third**

**b. -**

**c. The 12th rib can be projected on the lower renal pole**

**d. The 12th rib intersects the kidney in the lower third**

**e. The 12th rib bisects the kidney in the middle**

420. 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. Idiopathic amyloidosis**

**b. Senile amyloidosis**

**c. Diffuse hyalinosis**

**d. Local tumor-like amyloidosis**

**e. Secondary amyloidosis**

421. 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. Plasma cells**

**b. Neutrophils**

**c. Macrophages**

**d. Lymphocytes**

**e. Phagocytes**

422. Systemic blood pressure of a person equals 120/65 mm Hg. Blood ejection into aorta occurs when left ventricular pressure exceeds:

**a. 90 mm Hg**

**b. 65 mm Hg**

**c. 10 mm Hg**

**d. 120 mm Hg**

**e. 100 mm Hg**

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

- a. Leukemoid reaction
- b. Leucopenia
- c. Leukocytosis

**d. Agranulocytosis**

- e. Leukemia

424. 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 albuginea
- d. Tunica dartos
- e. Fascia spermatica interna

425. 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. Skeletal muscle
- b. Nerve fiber
- c. Smooth muscle
- d. Atypical cardiac muscle cells

**e. Contractile myocardium**

426. 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. Antidepressants
- b. Adaptogens
- c. Psychomotor stimulants

**d. Neuroleptics**

- e. Tranquilizers

427. 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. Anticholinesterase drugs**

- b. Cholinesterase reactivators
- c. Nicotinic agonists
- d. Muscarinic agonists
- e. Nicotinic antagonists

428. 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. Basophil degranulation in tissues
- b. Interleukin-2-induced proliferation of T lymphocytes

**c. Interleukin-1-stimulation of hepatocytes**

- d. -
- e. Heat-induced destruction of body cells

429. 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. Entamoeba gingivalis

**b. Trichomonas vaginalis**

- c. Lamblia intestinalis
- d. Trichomonas hominis
- e. Toxoplasma gondii

430. 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. Major mastoid air cell

**b. Eustachian tube**

- c. Internal auditory meatus
- d. Inner ear
- e. External auditory meatus

431. 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 tissue respiration

**b. Intensified anaerobic glycolysis**

- c. Decreased anaerobic respiration
- d. Normal ratio of the processes
- e. Intensified oxidative processes

432. 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. Hypercoagulability

**b. Increased ESR**

- c. Decreased hematocrit
- d. Decreased ESR
- e. Increased hematocrit

433. 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. Pilocarpine hydrochloride

**c. Atropine sulfate**

- d. Scopolamine hydrobromide
- e. Methacin

434. 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. Viral pneumonia
- b. Hypostatic pneumonia
- c. Adult respiratory distress syndrome
- d. Staphylococcal bronchopneumonia

**e. Croupous pneumonia**

435. 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. Doxycycline**

- c. Ampicillin
- d. Chloramphenicol (Levomycetin)
- e. Amoxicillin

436. 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. Prozerin (Neostigmine)
- b. Celecoxib
- c. Prednisolone

**d. Cyanocobalamin**

e. Piracetam

437. 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. Activation of T killers

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

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

439. 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. Histidine
- b. Phenylalanine
- c. 5-Hydroxytryptophan**
- d. Serine
- e. Tyrosine

440. 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. Venous hyperemia
- b. Venous stasis
- c. Angiospastic ischemia**
- d. Arterial hyperemia
- e. True (capillary) stasis

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

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

443. 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. Ciprofloxacin**
- b. Benzylpenicillin
- c. Erythromycin
- d. Bicillin-5
- e. Phenoxymethylpenicillin

444. 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. Mesangial cells
- c. Interstitial cells
- d. Juxtavascular cells
- e. Macula densa cells

445. 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. IgE

- b. -
- c. IgA
- d. IgM
- e. IgD

446. 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. Serum sickness
- b. Type IV hypersensitivity reaction
- c. Atopic reaction
- d. Type II hypersensitivity reaction
- e. Arthus reaction

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

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

d. Retinol acetate

- e. Cyanocobalamin

448. 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. Erythromycin

b. Meropenem

- c. Rifabutin
- d. Levofloxacin
- e. Streptomycin

449. 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. Portal cirrhosis of the liver

- b. Primary biliary cirrhosis of the liver
- c. Incomplete septal cirrhosis of the liver
- d. Postnecrotic cirrhosis of the liver
- e. Secondary biliary cirrhosis of the liver

450. 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. Hypothalamic damage

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

451. 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. Fibrinogen concentration
- c. International normalized ratio
- d. ESR

**e. Prothrombin time**

452. Anticoagulant therapy is indicated in cases of acute thrombosis. What direct-acting anticoagulant is used if there is a risk of thrombosis?

- a. Fraxiparine (Nadroparin)
- b. Pentoxifylline
- c. Warfarin
- d. Dipyridamole

**e. Heparin**

453. 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. Autosomal recessive
- b. Y-linked
- c. X-linked dominant

**d. Autosomal dominant**

e. X-linked recessive

454. 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 factor is the crucial one at the stage of platelet adhesion during the formation of a platelet thrombus?

**a. Von Willebrand factor**

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

455. 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 osmoreceptors**

**b. Pressor reflex from chemoreceptors**

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

456. 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. Bacteriology**

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

457. 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. Osteoarthritis**

**b. Rheumatoid arthritis**

- c. Ankylosing spondylitis (Bekhterev's disease)
- d. Rheumatic arthritis
- e. Systemic lupus erythematosus

458. A patient with alkaptonuria has signs of arthritis and ochronosis. What substance accumulates in the joints in this case, causing pain?

**a. Oxalates**



b. Urates

c. Homogentisates

d. Carbonates

e. Phosphates

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

a. Mesencephalon

b. Cerebellum

c. Diencephalon

d. Medulla oblongata

e. Cervical spinal cord

460. As a result of a head injury, a hematoma formed, localized in the area of the middle cranial fossa on the left, causing pupil dilation on the affected side. What nerve is affected in this case?

a. N. trigeminus

b. N. opticus

c. N. oculomotorius

d. N. trochlearis

e. N. abducens

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

a. Serotonin

b. Acetylcholine

c. Thromboxane

d. Hageman factor

e. Lymphokines

462. 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. Antagonism

b. Cumulation

c. Potentiation

d. Summation

e. Chemical interaction

463. 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. Anterior vaginal fornix

b. Posterior vaginal fornix

c. Anterior vaginal wall

d. Internal os

e. Cervix

464. 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. Type I alveolocytes

b. Type II alveolocytes

c. Endothelial cells

d. Alveolar macrophages

e. Clara's cells (club cells)

465. 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. Leishmaniasis

b. Syphilis

c. Trypanosomiasis

- d. Relapsing fever
- e. Leptospirosis

466. 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. Escherichia coli
- b. Pseudomonas aeruginosa**
- c. Staphylococcus aureus
- d. Streptococcus mutants
- e. Proteus vulgaris

467. 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. Essential hypertension
- c. Atherosclerosis
- d. Infectious myocarditis

**e. Rheumatism**

468. 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. Acute posthemorrhagic anemia
- c. Sickle cell disease

**d. Iron deficiency anemia**

e. Pernicious anemia

469. 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. Bilirubin
- b. Galactose
- c. Uric acid

**d. Sialic acid**

e. Glucose

470. 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. Repeat the test in a month

**c. BCG vaccination**

- d. Urgent isolation of the boy from his groupmates
- e. Serodiagnosis of tuberculosis

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

472. 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 beta-cells**
- b. Damage to the pituitary gland
- c. Strong bond between insulin and protein

- d. High insulinase activity
- e. Absence of insulin receptors

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

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

475. 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 common nasal meatus
- b. Right middle nasal meatus**
- c. Right supreme nasal meatus
- d. Right inferior nasal meatus
- e. Right superior nasal meatus

476. 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. Hypokalemia**
- b. Hypocalcemia
- c. Hypercalcemia
- d. Hypochloremia
- e. Hyperkalemia

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

478. 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. Metoprolol**
- c. Medazepam
- d. Salbutamol
- e. Nitroglycerin

479. 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. Gastric inhibitory peptide
- e. Vasopressin

480. 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. Amikacin

c. Thymalinum

d. Interferon

e. Rimantadine

481. 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. Adventitial

b. Juxtaglomerular

c. Juxtavascular

d. Fibroblasts

e. Mesangial

482. 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. Ascaris

b. Trichuris

c. Enterobius vermicularis

d. Ancylostoma

e. Trichinella

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

b. Inhibition of leukotriene receptors

c. Blockade of H<sub>1</sub>-histamine receptors

d. Stimulation of beta-adrenoreceptors

e. Stimulation of H<sub>1</sub>-histamine receptors

484. 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

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

a. Muscarinic acetylcholine receptors

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

c. Nicotinic acetylcholine receptors

d. alpha-adrenergic receptors

e. beta-adrenergic receptors

486. 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. Recurrence

b. Reinfection

c. Secondary infection

d. Superinfection

e. Mixed infection

487. 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. Congenital icteric form of hemolytic disease
- b. Edematous form of hemolytic disease**
- c. Anemic form of hemolytic disease
- d. Hemorrhagic disease of newborn
- e. Postpartum icteric form of hemolytic disease

488. 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. Cerebellum
- b. Hypothalamus
- c. Spinal cord
- d. Cerebral cortex**
- e. Medulla oblongata

489. 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. Cervical plexus
- c. Intercostal nerves
- d. Nerve roots
- e. Spinal cord

490. 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. Fuchsin
- b. Methylene blue
- c. Romanowsky-Giemsa
- d. Ziehl-Neelsen**
- e. Gram

491. 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. Reticular formation**
- b. Hippocampus
- c. Cerebral cortex
- d. Corpora quadrigemina
- e. Substantia nigra

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

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

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

494. 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. Blood urea
- c. Urine glucose
- d. Glycated hemoglobin

**e. Glucose tolerance**

495. 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. Typical productive inflammation**

**b. Tuberculous inflammation**

- c. Alternative inflammation
- d. Leprosy inflammation
- e. Exudative inflammation

496. 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. Prostacyclin
- d. Interleukin-1

**e. Colony-stimulating factor**

497. 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. Recombination

**c. Replication**

- d. Transcription
- e. Translation

498. 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

499. 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. Cushing syndrome
- b. Adiposogenital dystrophy
- c. Simmonds disease
- d. Pituitary dwarfism

**e. Cushing disease**

500. 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. Enterobiasis**

- b. Trichuriasis
- c. Ancylostomiasis
- d. Amebiasis
- e. Ascariasis

501. 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. Macrophage

- b. Plasma cell
- c. Medium size lymphocyte

d. Monocyte

- e. Small lymphocyte

502. 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. Taeniarhynchiasis
- b. Taeniasis

c. Opisthorchiasis

- d. Enterobiasis
- e. Diphyllbothriasis

503. 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. A strong bond forms between the vitamin and blood plasma proteins
- b. Vitamin elimination is accelerated
- c. Vitamin biotransformation is accelerated
- d. Vitamin absorption is slowed down

e. Isoniazid is an antagonist of vitamin B<sub>6</sub>

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

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

e. Decrease of forced expiratory volume

505. 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. Cofactor

- b. Substrate
- c. Allosteric regulator
- d. Product
- e. Inhibitor

506. 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. Lipase
- b. Dipeptidases
- c. Amylase

d. Trypsin

- e. Pepsin

507. 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. Glucose solution
- d. Magnesium chloride

e. Calcium chloride

508. 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. Congo red
- b. Methylene blue

- c. Picrofuchsin
- d. Hematoxylin and eosin

e. Sudan III

509. 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. T lymphocytes

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

510. Autopsy of the body of a 62-year-old man shows a supraaortic 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. Atherosclerosis
- b. Essential hypertension
- c. Rheumatic aortitis

d. Syphilitic aortitis

e. Septic aortitis

511. 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

512. 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. IV
- b. V
- c. VII

d. III

e. VI

513. 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 segregation of genes

b. Law of uniformity of the first hybrid generation

- c. Phenomenon of genetic linkage
- d. Law of independent assortment
- e. Phenomenon of sex-linked inheritance

514. 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. Left-shift of the leukogram
- c. Relative lymphopenia

d. Pancytopenia

e. Erythrocytosis

515. 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 regenerative left shift

b. Neutrophilia with a degenerative left shift

c. Absolute monocytopenia

d. Neutrophilia with a right shift

e. Absolute lymphocytopenia

516. 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. Oculomotor

b. Vagus

c. Accessory

d. Trigeminal

e. Facial

517. 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. Aregenerative anemia

e. Megaloblastic anemia

518. 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 glucocorticoids

b. Increased thyroid hormones

c. Decreased aldosterone

d. Increased aldosterone

e. Increased natriuretic hormone

519. 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. Glucose

b. Lactate

c. Glycogenic amino acids

d. Fatty acids

e. Glycerin

520. 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 plasma flow

b. Glomerular filtration rate

c. Tubular secretion

d. Tubular reabsorption

e. Renal blood flow

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

a. Amino acid activation

b. Replication

c. Transcription

d. Repair

e. Elongation

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

523. 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. Neutrophils**
- b. B-lymphocytes
- c. Mast cells
- d. Basophils
- e. Eosinophils

524. 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. Decrease in duration
- b. Increase in force
- c. Remain unchanged
- d. Increase in duration
- e. Disappear**

525. 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. Xanthine oxidase**
- b. Hypoxanthine phosphoribosyltransferase
- c. Adenosine deaminase
- d. Adenine phosphoribosyltransferase
- e. Guanine deaminase

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

527. 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. Paroxysmal tachycardia
- b. Decreased stroke volume of the heart**
- c. Anaphylactic reaction to myocardial proteins
- d. Intoxication with necrotic decay products
- e. Decreased volume of the circulating blood

528. 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. Atropine sulfate
- b. Strophanthin
- c. Corglycon
- d. Dobutamine**
- e. Reserpine

529. 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. Hemorrhagic inflammation

**b. Catarrhal inflammation**

c. Bruise

d. Purulent inflammation

e. Venous plethora

530. 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. GABA

**b. Serotonin**

c. Dopamine

d. Noradrenaline

e. Acetylcholine

531. 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 complex mechanism

b. Autoimmune mechanism

**c. Reaginic hypersensitivity reaction**

d. Immune-mediated cytolysis

e. Inflammatory mechanism

532. 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. Arteriolosclerotic nephrosclerosis

**b. Systemic lupus erythematosus**

c. Amyloidosis

d. Rheumatism

e. Atherosclerotic nephrosclerosis

533. 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. Hepatitis

**b. Myocardial infarction**

c. Cholecystitis

d. Rheumatism

e. Pancreatitis

534. 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. Phosphorylase

b. Adenylate cyclase

**c. Carbonic anhydrase**

d. 2,3-Diphosphoglycerate

e. Protein kinase

535. 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. Turner syndrome

**b. Edwards syndrome**

c. Klinefelter syndrome

d. Patau syndrome

e. Down syndrome

536. 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. Validol (Menthyl isovalerate)
- c. Menadione**
- d. Neodicumarin
- e. Heparin

537. A patient has been provisionally diagnosed with toxoplasmosis. What biological material was used to diagnose this disease?

- a. Feces
- b. Blood**
- c. Duodenal contents
- d. Sputum
- e. Urine

538. 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. Reticular tissue
- b. Adipose tissue
- c. Bone tissue
- d. Connective tissue proper
- e. Cartilage tissue**

539. 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. Blockade of calcium channels in nerve fibers
- c. -
- d. Increasing the sodium permeability of the membrane of nerve fibers
- e. Increasing the potassium permeability of the membrane of nerve fibers

540. 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. brachialis
- b. A. radialis
- c. A. profunda brachii**
- d. A. axillaris
- e. A. ulnaris

541. What component of a human diet cannot be digested in the gastrointestinal tract, but nevertheless is a necessary part of nutrition?

- a. Cellulose**
- b. Sucrose
- c. Lipids
- d. Starch
- e. Protein

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

543. During a surgery, the surgeon must find the site, where the portal hepatic vein begins. Name this site:

- a. On the posterior wall of the bursa hepatica
- b. In the hepatogastric ligament
- c. Behind the head of the pancreas**

- d. Behind the body of the pancreas
- e. Behind the stomach

544. 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. Methylmalonyl-CoA
- d. Acetyl-CoA
- e. Propionyl-CoA

545. 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. Dicrocoeliasis
- b. Intestinal schistosomiasis
- c. Opisthorchiasis
- d. Japanese schistosomiasis
- e. Urogenital schistosomiasis

546. 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. Perinatal
- b. Intranatal
- c. Antenatal
- d. Progenesis
- e. Postnatal

547. The synthesis of dioxypyphenylalanine (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. 5-Oxytryptophan
- b. Glutamic acid
- c. Lysine
- d. Tyrosine
- e. Tryptophan

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

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

550. 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. Fructose-1-phosphate
- b. Glycerol-3-phosphate
- c. Galactose-1-phosphate
- d. Ribose-5-phosphate
- e. Phosphoenolpyruvate

551. 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 II (antibody-mediated cytotoxicity)
- b. Granulomatosis
- c. Type III (immune complex-mediated cytotoxicity)
- d. Type I (reagine type)

**e. Type IV (cell-mediated cytotoxicity)**

552. 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. Fructose
- b. Triglycerides
- c. Fatty acids
- d. Glycogen

**e. Glycosaminoglycans**

553. 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. Tetracyclines**

- b. Aminoglycosides
- c. Macrolides
- d. Cephalosporins
- e. Polyenes

554. 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. Micrococci
- b. Streptococci
- c. Tetracocci
- d. Diplococci

**e. Staphylococci**

555. 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 occipitalis
- d. Insula
- e. Lobus temporalis

556. A patient diagnosed with tuberculosis was prescribed etiotropic treatment. What antibiotic should be chosen for treatment in this case?

- a. Levomycetin (Chloramphenicol)
- b. Cefalexin

**c. Rifampicin**

- d. Tetracycline
- e. Bicillin (Benzathine benzylpenicillin)

557. 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 change the acid-alkaline balance of the blood
- c. They lower the central venous pressure

**d. They increase the colloid osmotic blood pressure**

- e. They reduce the volume of the circulating blood

558. 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. Peroxidase oxidation of fats

**b. Microsomal oxidation**

c. Tissue respiration

d. Lipid peroxidation

e. Oxidative phosphorylation

559. 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<sub>2</sub>-adrenergic receptors in the bronchial smooth muscles. Name this drug:

a. Theophylline

b. Methacin

**c. Salbutamol**

d. Prednisolone

e. Cromoglicic acid

560. 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. Arthritis

b. Joint inflammation

c. Rheumatism

**d. Mitral valve insufficiency**

e. Rheumocarditis

561. 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. Granulomatous cholecystitis

b. Acute gangrenous cholecystitis

**c. Acute phlegmonous cholecystitis**

d. Acute catarrhal cholecystitis

e. Chronic cholecystitis

562. 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. Jejunum

b. Sigmoid colon

c. Ileum

**d. Transverse colon**

e. Duodenum

563. 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. Glycolysis

b. Glycogenolysis

c. Proteolysis

d. Gluconeogenesis

**e. Fatty acid oxidation**

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

a. Coronary spasm

**b. Peripheral vessel dilation**

c. Peripheral vessel constriction

d. Increased heart rate

e. Stable hyperglycemia

565. 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. Increased insulin synthesis

c. Had practically no resorptive effect

d. Had short-term action

e. Was cheaper

566. 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. Staphylococcal toxicoinfection

b. Salmonellosis

c. Dysentery

d. Typhoid fever

e. Botulism

567. As a result of the injury, the spinal cord of a person was damaged with a complete its rupture at the level of the first cervical vertebra. How will the breathing of the patient change?

a. Breathing depth will increase

b. Breathing will remain unchanged

c. Respiratory rate will increase

d. Respiratory rate will decrease

e. Breathing will stop

568. 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. Indometacin

b. Butadion (Phenylbutazone)

c. Beclometasone

d. Synaflan (Fluocinolone acetonide)

e. Prednisolone

569. 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. Ribosomes

b. Microfibrils

c. Mitochondria

d. Glycocalyx

e. Centrosome

570. 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. Hyaluronidase

e. Trypsin

571. 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. 5.5 mmol/L

b. 3.3 mmol/L

c. 2.5 mmol/L

d. 10 mmol/L

e. 8.0 mmol/L

572. 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. Hypothalamus

b. Reticular formation



- c. Thalamus
- d. Red nucleus
- e. Substantia nigra

573. 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. Actinomycotic granuloma
- c. Tuberculous granuloma

d. Rheumatic granuloma

- e. Leprous granuloma

574. 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. Sphingomyelinase deficiency

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

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

a. Amiodarone

- b. Diclofenac sodium
- c. Acetylsalicylic acid
- d. Drotaverine hydrochloride
- e. Furacilin (Nitrofurantoin)

576. 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. Genealogical method
- c. Cytogenetics
- d. Population statistics

e. Biochemical method

577. 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. Phagocytes
- b. Natural killers

c. T-lymphocytes

- d. Complement
- e. B-lymphocytes

578. 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. Somatomedins

- b. Lipotropins
- c. Atriopeptins
- d. G proteins
- e. Endorphins

579. 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. Wilson disease
- b. Trisomy X

c. Turner syndrome

- d. Down syndrome
- e. Lesch-Nyhan syndrome

580. 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. Tocopherol acetate
- c. Cyanocobalamin
- d. Ergocalciferol
- e. Nicotinic acid

581. 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. Isoniazid
- b. Pyrazinamide
- c. Sodium para-aminosalicylate
- d. Cycloserine
- e. Rifampicin**

582. 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. Tertiary
- b. Secondary
- c. Primary
- d. -

**e. Quaternary**

583. 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 calcium channels and increases dopamine levels in the brain
- c. Activates the cholesterol catabolism
- d. Blocks sodium channels and increases GABA levels in the brain**
- e. Increases the activity of hippocampal neurons

584. 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. Complete AV block
- b. Ventricular extrasystole
- c. First-degree AV block
- d. Paroxysmal supraventricular tachycardia**
- e. Atrial extrasystole

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

586. 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. Insulin
- b. Thyroxine**
- c. Sex hormones
- d. Catecholamines

e. Cortisol

587. A patient was prescribed a drug with methionine to maintain liver function. Synthesis of what substance is ensured in this case?

a. Phosphatidylcholine

b. Pyruvate

c. Citrate

d. Lactate

e. Phosphatidylserine

588. A patient is diagnosed with herpetic stomatitis. What should be prescribed for treatment in this case?

a. Clotrimazole

b. Acyclovir

c. Sulfacyl-sodium (Sulfacetamide)

d. Tetracycline

e. Thymalin

589. 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. Fibrosarcoma

b. Hemangioendothelioma

c. Malignant pericytoma

d. Angiofibrosarcoma

e. Kaposi's sarcoma

590. 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. Fish

b. Rodents

c. Birds

d. Foxes

e. Sick people

591. 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. Metaplasia

b. Dysplasia

c. Heteroplasia

d. Hyperplasia

e. Heterotopia

592. 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. Adaptogens

b. Muscarinic agonists

c. beta<sub>2</sub>-adrenergic agonists

d. Analeptics

e. Narcotic analgesics

593. Examination detected disturbed circulation in the patient's pancreas. What artery is likely to be damaged in this case?

a. A. gastrica dextra

b. A. gastroepiploica dextra

c. A. lienalis

- d. A. dastrica sinistra
- e. A. hepatica propria

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

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

595. Copper deficiency has an effect on energy metabolism in the human body. What substance becomes deficient as a result of this process?

- a. Cytochrome oxidase
- b. Pyruvate carboxylase
- c. Arginase
- d. Succinate dehydrogenase
- e. Lactate dehydrogenase

596. 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) femoralis
- b. A) fibularis
- c. A) tibialis anterior
- d. A) tibialis posterior

e. A) poplitea

597. 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. Skeletal muscle cells
- c. Cardiomyocytes
- d. Smooth muscle cells
- e. Glandular cells

598. 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. Clot retraction
- b. Thrombin formation
- c. Fibrin formation
- d. Prothrombinase formation
- e. Fibrinolysis

599. 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. Pituitary dwarfism
- b. Acromegaly
- c. Cushing disease
- d. Adiposogenital dystrophy
- e. Addison disease

600. A tuning fork was used to assess the patient's perception of sounds. When it was placed near the outer ear, the patient was unable to hear the sound of the tuning fork in the right ear. However, when the foot piece of the tuning fork was placed on the mastoid process, the patient was able to perceive its sound. What part of the auditory sensory system is damaged in this case?

- a. Middle ear
- b. Medial geniculate body
- c. Inferior colliculi
- d. Inner ear
- e. Auditory (cochlear) nerve

601. 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. Molecular biological
- b. Bacteriological
- c. Serological
- d. Biological
- e. Microscopy

602. 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 XII
- b. Cranial nerve VII
- c. Cranial nerve VI
- d. Cranial nerve XI
- e. Cranial nerve X

603. 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. Cytochrome oxidase
- b. Glucose-6-phosphate dehydrogenase
- c. Cyclooxygenase
- d. Cholinesterase
- e.  $\text{Na}^+$ ,  $\text{K}^+$ -ATPase

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

- a. Recessus costomediastinalis pleure
- b. Recessus frenicomediastinalis pleure
- c. Sinus transversus pericardii
- d. Recessus costodiaphragmaticus pleure
- e. Sinus obliquus pericardii

605. 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. Obstructive disturbance of alveolar ventilation
- d. Diffuse insufficiency
- e. Restrictive disturbance of alveolar ventilation

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

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

607. 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. trigeminale
- c. G. ciliare
- d. G. spirale
- e. G. vestibulare

608. 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 -  $4.4 \cdot 10^9/L$ , platelets -  $48 \cdot 10^9/L$ , segmented neutrophils - 17%, lymphocytes - 15%, blast cells - 68%. All cytochemical reactions of blast cells are negative. What hematologic conclusion can be made?

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

609. 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. Superior diaphragmatic
- b. Parasternal
- c. Anterior mediastinal
- d. Intercostal

**e. Axillary**

610. 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. Developing stage of myocardial hypertrophy
- b. Tonogenic dilatation
- c. Cardiac tamponade

**d. Myogenic dilatation**

e. Stage of cardiosclerosis

611. 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. Acute cardiac tamponade

**c. Cardiac volume overload**

- d. Coronarogenic cardiac damage
- e. Cardiac pressure overload

612. 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. Provoke gingival hemorrhages
- b. Damage cartilage tissue in children**
- c. Cauterize mucous membranes
- d. Facilitate calcium loss in teeth and bones
- e. Damage dentin

613. 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. Oxyhemoglobin
- c. Methemoglobin

**d. Carboxyhemoglobin**

e. Carbinohemoglobin

614. 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. Glycogenolysis

**d. Gluconeogenesis**

e. Aerobic glycolysis

615. 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. Proprioceptive sensitivity

b. -

c. Tactile sensitivity

d. Thermal sensitivity

e. Pain sensitivity

616. 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 lipids

b. Synthesis of polysaccharides

c. Phagocytosis

d. Reabsorption of sodium ions

e. Deposition of calcium ions

617. 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. Follicular colitis

c. Nonspecific ulcerative colitis

d. Catarrhal colitis

e. Fibrinous colitis

618. 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. Respiratory hypoxia

b. Hypoxic hypoxia

c. Circulatory hypoxia

d. Hemic hypoxia

e. Tissue hypoxia

619. 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. Cardiac gastric glands

b. Proper gastric glands

c. Pyloric gastric glands

d. Esophageal cardiac glands

e. Esophageal glands proper

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

a. Testosterone

b. Vasopressin

c. Adrenaline

d. Parathyroid hormone

e. Aldosterone

621. 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. Hydrogen peroxide

b. Sodium bicarbonate

c. Ethyl alcohol

d. Chlorhexidine digluconate

e. Potassium permanganate

622. 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. *Escherichia coli*
- b. *Proteus vulgaris*
- c. *Staphylococcus aureus*
- d. *Klebsiella oslaenae*
- e. *Pseudomonas aeruginosa*

623. 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. Iris part of the retina
- b. Uvea
- c. Ciliary part of the retina
- d. Punctum caecum
- e. Macula lutea

624. 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. Exotoxin
- b. Anaerobic bacteria
- c. Anatoxin
- d. Enterotoxin
- e. Antitoxin

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

626. 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. Activation of the sympathoadrenal system
- b. Development of DIC syndrome
- c. Increased permeability of the capillary wall
- d. Release of vasopressin into the blood
- e. Centralization of blood circulation with the development of renal ischemia

627. 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. Physical and chemical
- c. Immunological
- d. Biochemical
- e. Morphological

628. Acetylsalicylic acid and glucocorticoids both have a marked anti-inflammatory effect. However, unlike glucocorticoids, acetylsalicylic acid has no effect on the synthesis of:

- a. Prostaglandins F
- b. Thromboxanes
- c. Prostacyclins
- d. Prostaglandins E
- e. Leukotrienes

629. 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. Neuroglobulin



**b. Proopiomelanocortin (POMC)**

- c. Neuroalbumin
- d. Thyroglobulin
- e. Neurostromin

630. 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. Influenza pneumonia
- b. Pulmonary actinomycosis
- c. Pulmonary candidiasis

**d. Pulmonary tuberculosis**

- e. Pneumococcal pneumonia

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

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

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

- a. Fascia spermatica externa
- b. Tunica dartos
- c. Fascia cremasterica

**d. Tunica vaginalis testis**

- e. Fascia spermatica interna

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

- a. Cyclic guanosine monophosphate
- b. Cyclic adenosine monophosphate

**c. Angiotensin II**

- d. Prostaglandin E2
- e. Natriuretic factor

634. 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. Smooth muscle cells
- b. Myofibroblasts
- c. Endothelial cells of damaged vessels

**d. Decidual cells**

- e. Fibroblasts

635. 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. Hypoplastic anemia
- c. Metaplastic anemia
- d. Hemolytic anemia
- e. B<sub>12</sub> and folate-deficiency anemia

636. 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. Tuberculosis
- b. Syphilis

- c. Abscess in the submandibular region
- d. Leprosy

**e. Actinomycosis**

637. 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. Autosomal dominant**
- b. Autosomal recessive
- c. X-linked recessive
- d. X-linked dominant
- e. Y-linked

638. 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 inferior**

- b. A) colica dextra
- c. A) colica sinistra
- d. A) mesenterica superior
- e. Truncus coeliacus

639. 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. Impaired transcription
- c. Accumulation of substances
- d. Impaired mitosis
- e. Impaired translation

640. 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. Rapid growth**

**b. Infiltrative growth**

- c. Biochemical atypism
- d. Immunological anaplasia
- e. Autonomy

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

- a. Nitrite
- b. Sulfate
- c. Phosphate

**d. Cyanide**

**e. Oxalate**

642. 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. Impaired hemodynamics in the kidneys**

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

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

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

**a. Connective tissue**

**b. Negative reaction to stercobilin**

- c. Starch granules
- d. Partially digested cellulose
- e. Positive reaction to stercobilin

644. 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. Corticotropin-releasing hormone**

- b. Thyrotrophic hormone
- c. Somatotrophic hormone
- d. Growth hormone
- e. Epidermal growth factor

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

**e. Hepatoduodenal ligament**

646. 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. Red bone marrow
- b. Lymph node

**c. Spleen**

- d. Tonsil
- e. Thymus

647. 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. Adenovirus**

**b. Chlamydia**

- c. Mycoplasma
- d. Hemolytic streptococcus
- e. Diphtheroid

648. 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-1**

- c. Cyclooxygenase-2
- d. Adenylate cyclase
- e. Kallikrein

649. 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 carbohydrates
- c. Metabolism of fats

**d. Metabolism of purines**

- e. Metabolism of amino acids

650. 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. Bile acids
- b. Prostaglandins

c. Heme

- d. Collagen
- e. Insulin

651. Antileukocytic antibodies are detected in the blood of a patient with leukopenia. What type of Coombs-Gell hypersensitivity reaction developed in this case?

- a. Anaphylactic

b. Cytotoxic

- c. Delayed-type hypersensitivity
- d. Immune complex-mediated
- e. Stimulating

652. 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. Hemolytic anemia

b. Malaria

- c. Septicemia
- d. Black pox (hemorrhagic smallpox)
- e. Addison's disease

653. 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. medianus
- d. N. cutaneus brachii medialis

e. N. radialis

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

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

655. 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. Amylo-1,6-glucosidase
- c. Phosphofructokinase

d. Glucose-6-phosphatase

- e. Glycogen synthase

656. A patient with influenza has fever, dyspnea, and tachycardia. How will the oxygen affinity of Hb change under such conditions?

- a. First increases, then decreases
- b. Increase
- c. -
- d. Remain unchanged

e. Decrease

657. 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. Furazolidone
- b. Emetine hydrochloride
- c. Metronidazole**
- d. Phthalazol (Phthalylsulfathiazole)
- e. Levomycetin (Chloramphenicol)

658. 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. Dopamine
- c. beta-alanine
- d. GABA**
- e. Serotonin

659. 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. Growth hormone-releasing factor
- b. Growth hormone
- c. Cortisol
- d. Glucagon
- e. Insulin**

660. 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. Bruton's hypogammaglobulinemia**
- b. Louis-Bar syndrome
- c. Thymic hypoplasia
- d. Wiskott-Aldrich syndrome
- e. Swiss-type immunodeficiency

661. 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. Increased blood levels of creatine kinase**
- b. Retrosternal pain
- c. Increased blood levels of catecholamines
- d. Ventricular fibrillation
- e. Decreased minute blood volume

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

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

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

664. Knee-jerk reflex is absent in a person. Where is the spinal cord damaged in this case?

- a. L1-L2 segments**

- b. Th9-Th10 segments
- c. Th7-Th8 segments
- d. C5-C7 segments

e. L3-L4 segments

665. 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. Retinol acetate

- b. Riboflavin
- c. Tocopherol acetate
- d. Pyridoxine hydrochloride
- e. Ergocalciferol

666. T lymphocytes were affected by HIV. In the process, viral enzyme reverse transcriptase (RNA-dependent DNA-polymerase) catalyzes the synthesis of:

- a. Viral protein on the viral RNA matrix
- b. DNA on the viral RNA matrix
- c. Viral RNA on the DNA matrix
- d. Informational RNA on the viral protein matrix
- e. Viral DNA on the DNA matrix

667. 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. Analgin (Metamizole)
- c. Meridil (Methylphenidate)

d. Piracetam (Nootropil)

e. Sydnocarb (Mesocarb)

668. In a patient with hypochromic anemia, erythrocytes contain 45% of HbS and 55% of HbA1. What type of anemia is it?

a. Sick cell anemia

- b. Glucose-6-phosphate dehydrogenase deficiency anemia
- c. alpha-thalassemia
- d. Microspherocytic anemia
- e. Addison-Biermer disease

669. 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. Acidotic
- b. Calcium
- c. Nucleic

d. Electrolyte-osmotic

e. Protein

670. 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. Motor functions of the lower limbs
- b. Motor functions of the upper limbs
- c. Sensitivity of the upper limbs
- d. Sensitivity and motor functions of the upper limbs
- e. Sensitivity of the lower limbs

671. 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 proteins and carbohydrates
- b. Mainly containing proteins and lipids
- c. Mainly containing carbohydrates

d. Mainly containing lipids and carbohydrates

e. Mixed type

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

a. Concomitant disease of a target organ

b. Accumulation of the medicinal substance in the body

**c. Hereditary enzymopathy**

d. Depletion of a substrate, with which this medicinal substance interacts

e. Inhibition of hepatic microsomal enzymes

673. 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. DiGeorge syndrome**

b. Klinefelter syndrome

c. Louis-Barr syndrome

d. Wiskott-Aldrich syndrome

e. Turner syndrome

674. 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. Masseter

b. Buccinator

c. Risorius

d. Zygomaticus major muscle

**e. Orbicularis oris**

675. 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. Rifampicin group

**b. Tetracycline group**

c. Cephalosporin group

d. Aminoglycoside group

e. Penicillin group

676. A child was diagnosed with helminths. What changes in the peripheral blood will be observed with this pathology?

a. Monocytosis

**b. Eosinophilia**

c. Leukocytosis

d. Basophilia

e. Neutrophilia

677. 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. Inhibition of salivation

b. Hydrochloric acid secretion in the stomach

c. Carbohydrate hydrolysis

**d. Emulsification of lipids**

e. Protein absorption

678. 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. Lymphogranulomatosis

**b. Antigen stimulation with follicular hyperplasia**

c. Atrophy of lymphoid tissue

d. Lymphosarcoma

e. Lymphocytic leukemia

679. 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. Glutamic acid
- b. Malonic acid
- c. Homogentisic acid
- d. Acetic acid

**e. Arachidonic acid**

680. 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. Hemorrhagic meningitis**

- b. Venous hyperemia of the meninges
- c. Purulent leptomeningitis
- d. Intracerebral hemorrhage
- e. Serous meningitis

681. 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. Cortisol
- b. Reproductive hormones

**c. Adrenaline, vasopressin**

- d. Aldosterone
- e. Oxytocin

682. Mitochondrial respiratory chain contains complex cytochrome proteins. What type of reactions do they catalyze?

- a. Reactions of deamination

**b. Redox reactions**

- c. Reactions of transamination
- d. Reactions of hydration
- e. Reactions of decarboxylation

683. 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. Elastic cartilage, endothelium
- b. Loose connective tissue, endothelium
- c. Hyaline cartilage, endothelium

**d. Dense connective tissue, endothelium**

- e. Cardiac muscle tissue, endothelium

684. The surgeon noticed aggregated lymphoid nodules (Peyer's patches) on the intestinal mucosa. What portion of the intestine is it?

- a. Cecum
- b. Rectum

**c. Ileum**

- d. Jejunum
- e. Duodenum

685. An anti-inflammatory drug that blocks cyclooxygenase activity was used in the treatment of a patient. What anti-inflammatory drug is it?

- a. Allopurinol

**b. Aspirin (Acetylsalicylic acid)**

- c. Creatine
- d. Thiamine



e. Analgin (Metamizole sodium)

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

a. Pathologically excessive

b. Pathological insufficient

c. -

d. Physiological

e. Reparative

687. 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. Fossa femoralis

b. Fascia pectinea

c. Arcus iliopectineus

d. Hiatus saphenus

e. Septum femorale

688. Chemically, thyroid hormones (thyroxine and triiodothyronine) are amino acid derivatives. Name this amino acid.

a. Threonine

b. Tyrosine

c. Methionine

d. Proline

e. Tryptophan

689. 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. Hyaluronic acid

b. Hyaluronidase

c. Elastin

d. Fibronectin

e. Collagen

690. 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-testis barrier

b. Blood-thymus barrier

c. Blood-brain barrier

d. Blood-air barrier

e. Blood-cerebrospinal fluid barrier

691. Due to a traumatic brain injury, a woman presents with functionally disturbed pineal gland. What functions will be disturbed in this woman?

a. Respiratory rate

b. Sleep-wake cycle

c. Menstrual cycle

d. Heart rate

e. Cardiac cycle

692. 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. Complement binding

b. Immunoelectrophoresis

c. Indirect immunofluorescence

d. Indirect hemagglutination

e. Solid-phase enzyme-linked immunosorbent assay

693. 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. Conjugata externa

c. Distantia intertrochanterica

d. Diameter oblique

e. Distantia interspinosa

694. Autopsy of the body of a child shows a primary intestinal tuberculosis complex: the primary affect is a jejunal ulcer, there are lymphangitis and regional caseous lymphadenitis. The death occurred as a result of ulcer perforation and development of diffuse peritonitis. What is the route of tuberculosis infection in this child?

a. Contact

b. Aerogenic

c. Mixed

d. Alimentary

e. Transplacental

695. 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. Urease activity

b. Resistance to vancomycin

c. Catalase activity

d. Capsule formation

e. Oxidase activity

696. 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 dominant

c. X-linked recessive

d. Autosomal dominant

e. Autosomal recessive

697. 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. Paratyphoid

b. Relapsing fever

c. Crohn disease

d. Typhoid fever

e. Dysentery

698. 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. Infiltration

c. Cyst

d. Node

e. Node with an infiltration in its center

699. 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. Genetic mutation

c. Polyploidy

d. Aneuploidy

e. Chromosomal mutation

700. A 55-year-old patient is being monitored by an endocrinologist for disturbed endocrine function of the pancreas, which manifests as a decrease in glucagon levels in the blood. What pancreatic cells are dysfunctional in this case?

- a. PP cells of the islets of Langerhans
- b. Delta-1 cells of the islets of Langerhans
- c. Delta cells of the islets of Langerhans

**d. Alpha cells of the islets of Langerhans**

- e. Beta cells of the islets of Langerhans

701. 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 amimia, and an increase in the somatic muscle tone. What brainstem structure is likely to be damaged in this case, causing this condition?

**a. Substantia nigra**

- b. Lateral vestibular nucleus (Deiters nucleus)
- c. Reticular formation
- d. Medial vestibular nucleus (Schwalbe nucleus)
- e. Nucleus of the third pair of cranial nerves

702. 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. Tachyphylaxis
- b. Toxic effect
- c. Drug dependence
- d. Tolerance

**e. Allergic reaction**

703. During a surgery, a Meckel's diverticulum was detected in the patient. Where in the gastrointestinal tract is it located?

- a. Cecum

**b. Ileum**

- c. Jejunum
- d. Sigmoid colon
- e. Duodenum

704. 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. Costomediastinal recess
- b. -

**c. Costodiaphragmatic recess**

- d. Transverse pericardial sinus
- e. Mediastinodiaphragmatic recess

705. 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. Animal indican**

- b. Stercobilinogen
- c. Oxyproline
- d. Creatinine
- e. Uric acid

706. 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. Proteus mirabilis
- b. Klebsiella pneumoniae
- c. Salmonella enteritidis

**d. Pseudomonas aeruginosa**

- e. Escherichia coli

707. 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. Sustac forte (Nitroglycerin)

- b. Potassium chloride
- c. Anaprilin (Propranolol)**

- d. Strophanthin
- e. Lidocaine

708. 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. Fibrinolysis
- b. Hypocoagulation
- c. Terminal
- d. Transient
- e. Hypercoagulation**

709. 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. Spironolactone
- b. Furosemide**

- c. Triamterene
- d. Acetazolamide
- e. Hydrochlorothiazide

710. 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. Metformin
- b. Dexamethasone

- c. L-thyroxine**
- d. Corticotropin
- e. Thiamazole

711. A patient with essential hypertension was prescribed a drug that inhibits angiotensin-converting enzyme (ACE). What drug is it?

- a. Carvedilol
- b. Losartan
- c. Nifedipine
- d. Colestyramine

- e. Lisinopril**

712. 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. Ranitidine
- b. Tavegil (Clemastine)
- c. Cromolyn sodium (Disodium cromoglycate)
- d. Loratadine

- e. Dimedrol (Diphenhydramine)**

713. 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. Common nasal meatus
- b. Above the upper nasal concha
- c. Superior nasal meatus
- d. Inferior nasal meatus
- e. Middle nasal meatus**

714. 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. Bekhterev disease**
- b. Rheumatoid arthritis

- c. Becker muscular dystrophy
- d. Duchenne muscular dystrophy
- e. Osteochondrosis of the cervical spine

715. 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. Dilation of arterioles
- c. Decrease of the force of heart contractions
- d. Dilation of veins
- e. Decrease of the heart rate**

716. 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. Chickenpox
- b. Scarlet fever
- c. Croupous pneumonia

- d. Measles**
- e. Diphtheria

717. 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. Shock phase**
- b. Exhaustion stage
- c. Resistance stage
- d. -
- e. Antishock phase

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

719. 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. Botulism**
- b. Dysentery
- c. Typhoid fever
- d. Tularemia
- e. Clamidosis

720. 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. Purkinje fibers
- b. Atrial myocardium
- c. Atrioventricular node**
- d. Ventricular myocardium
- e. His bundle

721. 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 2
- b. Herpes simplex virus 1**
- c. Cytomegalovirus

- d. Varicella zoster virus
- e. Epstein-Barr virus

722. 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. Small intestine
- b. Liver
- c. Transverse colon

**d. Stomach**

- e. Descending colon

723. 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. Abdominal constriction
- b. Bifurcation constriction
- c. Pharyngeal constriction
- d. Diaphragmatic constriction

**e. Aortic constriction**

724. 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. Syphilis
- b. Tularemia
- c. Melioidosis
- d. Chlamydiosis

**e. Gonorrhea**

725. 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. Albumin
- b. Creatinine

**c. Indole**

- d. Globulin
- e. Creatine

726. 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. Passive hemagglutination test
- b. Hemagglutination inhibition test
- c. Immunofluorescence

**d. Immunoblotting**

- e. PCR

727. 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. -
- c. In the cortex of the posterior part of the inferior frontal gyrus

**d. In the cortex of the posterior part of the superior temporal gyrus**

- e. In the hippocampus

728. 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. Nikethamide

- d. Bemegride
- e. Lobeline

729. Various substances can be used as anticoagulants, including natural polysaccharides. Select a natural polysaccharide among the substances listed below.

- a. Dextran
- b. Heparin**
- c. Hyaluronic acid
- d. Enoxaparin
- e. Vitamin K

730. 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. Adrenal glands
- b. Parathyroid gland
- c. Gonads
- d. Thyroid gland

**e. Pituitary gland**

731. 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. Temporalis (posterior fibers)**
- c. Masseter
- d. Temporalis (anterior fibers)
- e. Lateral pterygoid

732. 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. Fluconazole
- b. Clarithromycin**
- c. Rifampicin
- d. Oseltamivir
- e. Isoniazid

733. 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 hectica**
- b. Febris continua
- c. Febris acontinua
- d. Febris recurrens
- e. Febris remittens

734. 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 acidosis
- b. Metabolic acidosis
- c. Gaseous acidosis
- d. Non-gaseous alkalosis**
- e. Gaseous alkalosis

735. 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. Hematuria
- b. Hypo- and isosthenuria**
- c. Hypersulfatemia

- d. Cylindruria
- e. Hyperazotemia

736. A patient has a pancreatic tumor. During surgery it was accessed by making an opening through the lig. gastocolicum, 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. gastromentalis dexter
- b. A. gastrica dexter
- c. A. gastrica sinister
- d. A. gastro-duodenalis
- e. A. pancreatoduodenalis superior

737. 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 paralysis
- b. Central paresis
- c. Peripheral paralysis
- d. Peripheral paresis
- e. Reflex paresis

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

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

740. 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. Coombs test
- c. Opsonization test
- d. Agglutination test
- e. Ring precipitin test

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

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

742. 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. NK cells
- b. T cells



**c. Mast cells**

d. B cells

e. Promonocytes

743. 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 volume of the circulating blood

**b. Increased force of cardiac contractions and relaxation of the arterioles due to the effect of lactic acid**

c. Increased tone of the arterioles and increased volume of the blood depot

d. Increased force and rate of cardiac contractions

e. Increased renin release due to a decreased blood supply to the kidneys

744. 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. Acetylsalicylic acid

b. Paracetamol

**c. Morphine hydrochloride**

d. Pentamine (Azamethonium bromide)

e. Dimedrol (Diphenhydramine)

745. 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. Cumulation

b. Sensitization

**c. Drug addiction**

d. Potentiation

e. Hypersensitivity

746. 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. Nucleoid

**b. Plasmid**

c. Ribosome

d. Nucleus

e. Mesosome

747. 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. Postcentral gyrus**

b. Parahippocampal gyrus

c. Superior lateral gyrus

d. Cingulate gyrus

e. Precentral gyrus

748. 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. Human immunodeficiency virus

b. Hepatitis E virus

**c. Hepatitis B virus**

d. Hepatitis A virus

e. Epstein-Barr virus

749. 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. Exacerbation of nonspecific ulcerative colitis

- b. Typhoid fever
- c. Acute ulcerative colitis
- d. Dysentery
- e. Crohn disease

750. 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. Analgin (Metamizole)
- b. Fentanyl
- c. Omnopon (Papaveretum)
- d. Promedol (Trimeperidine)

e. Morphine

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

- a. Fentanyl
- b. Morphine
- c. Metamizole sodium

d. Trimeperidine

e. -

752. 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. Thrombocytopenia
- b. Anemia
- c. DIC syndrome

d. Uremia

e. Sepsis

753. 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. Dermatomyositis (Wagner-Unverricht-Hepp disease)

- b. Systemic scleroderma
- c. Zenker's degeneration of muscles in typhoid fever
- d. Myopathy
- e. Myositis

754. 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. Sclerosis
- b. Hyalinosis
- c. Amyloidosis
- d. Muroid swelling

e. Fibrinoid swelling

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

- a. Urokinase synthesis will increase
- b. Vitamin B<sub>6</sub> synthesis will decrease

- c. Prostaglandin synthesis will increase
- d. Calcium filtration in the glomeruli will decrease

e. Calcium reabsorption in the distal tubules will decrease

756. 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. Non-esterified fatty acids (NEFA)
- b. High-density lipoproteins
- c. Very-low-density lipoproteins

d. Low-density lipoproteins

e. Chylomicrons

757. What hormone stimulates the secretion of lipolytic and proteolytic enzymes by pancreatic cells?

a. Cholecystokinin-pancreozymin (CCK-PZ)

- b. Bombesin
- c. Aldosterone
- d. Somatostatin
- e. Secretin

758. 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. Pheochromocytoma

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

759. 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. Adrenal glands

- b. Thymus
- c. Testicles
- d. Parathyroid glands
- e. Thyroid gland

760. 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. Feces and urine

- b. Sputum
- c. Pharyngeal mucus
- d. Gastric lavage waters
- e. Nasal mucus

761. 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. Alkaline reaction of the nutrient medium
- b. The temperature of the nutrient medium must not exceed 35°C
- c. The nutrient medium contains vitamins and amino acids

d. No oxygen

e. Antibiotics are added into the nutrient medium to inhibit gram-negative microflora

762. ECG of a patient with hyperthyroidism shows an increased heart rate. What ECG element will be shortened, indicating this?

a. R-R interval

- b. P-Q interval
- c. P-T interval

- d. P-Q segment
- e. QRS complex

763. 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. Propionaldehyde
- b. Malonaldehyde
- c. Methanol
- d. Ethanol

**e. Acetaldehyde**

764. 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. Klinefelter syndrome
- c. Down syndrome

**d. Patau syndrome**

e. Edwards syndrome

765. A patient has been diagnosed with mitral valve stenosis. What pathogenetic type of heart failure is it?

- a. Heart failure due to myocardial hypertrophy
- b. Mixed form of heart failure

**c. Pressure overload-induced heart failure**

- d. Volume overload-induced heart failure
- e. Heart failure due to myocardial damage

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

**e. M. obliquus internus abdominis**

767. 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. Cerebellar injury
- b. Motor cortex injury
- c. Brainstem injury

**d. Unilateral right-side spinal cord injury**

e. Midbrain injury

768. 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. Jolly bodies
- c. Doehle bodies
- d. Mallory bodies

**e. Barr bodies**

769. 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. Lymphocyte emigration
- c. Fibroblast proliferation

**d. Secondary alteration**

e. Primary alteration

770. What period of the malaria plasmodium life cycle coincides with the manifestation of clinical symptoms of malaria in a patient?

- a. When merozoites emerge from destroyed erythrocytes
- b. In the period of tissue schizogony
- c. When sporozoites enter the human bloodstream
- d. During gametocyte formation
- e. When merozoites invade erythrocytes

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

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

773. 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 toxigenic characteristics
- b. Based on its cultural characteristics
- c. Based on its morphological characteristics
- d. Based on its antigenic characteristics
- e. Based on its phage sensitivity

774. 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. Palmar interossei
- b. Dorsal interossei
- c. Flexor digitorum profundus
- d. Flexor digitorum superficialis
- e. Lumbrical muscles

775. 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. Hyperuricemia
- b. Hypercholesterolemia
- c. Metabolic acidosis
- d. Retention azotemia
- e. Steatosis

776. 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. Primary contracted kidney
- b. Pyelonephritic contracted kidney

- c. Diabetic nephrosclerosis
- d. Secondary contracted kidney
- e. Amyloid contracted kidney

777. 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. Reabsorption in the collecting tubules of the kidney

**b. Glomerular filtration**

- c. Tubular secretion
- d. Reabsorption in the proximal part of the nephron
- e. Reabsorption in the distal part of the nephron

778. 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. Glanders

b. Leprosy

**c. Tuberculosis**

- d. Syphilis
- e. Rhinoscleroma

779. 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. Prion**

- c. Viroid
- d. Transposon
- e. Episome

780. 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. Slows down conduction in the heart

**b. Causes tachycardia, increases myocardial oxygen demand**

- c. Causes narrowing of coronary vessels
- d. Increases body temperature
- e. Decreases the force of heart contractions

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

a. Enzyme-linked immunosorbent assay is needed for antigen detection

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

- c. Nucleic acid is not integrated into the genome of the host
- d. These are simple viruses that affect only humans
- e. Radioimmunoassay is needed for antigen detection

782. 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. Viscerocutaneous reflex

b. Somatovisceral reflex

**c. Viscerosomatic reflex**

- d. Cutaneovisceral reflex
- e. Viscerovisceral reflex

783. 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 right ventricular failure

b. Chronic atrial failure

**c. Chronic heart failure**

- d. Acute global heart failure
- e. Acute left ventricular failure

784. 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. Progesterone
- b. Aldosterone
- c. Parathyroid hormone
- d. Corticosterone
- e. Testosterone

785. 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<sub>2</sub> - 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 acidosis
- c. Compensated non-gaseous alkalosis
- d. Decompensated non-gaseous alkalosis
- e. Compensated gaseous alkalosis

786. 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. Nerve excitability increased
- b. Nerve lability increased
- c. Threshold level of nerve depolarization decreased
- d. Potassium permeability of the nerve membrane decreased
- e. The second stimulus occurred during the absolute refractory period

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

788. 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. Phage typing
- b. Animal inoculation
- c. Biovar determination
- d. Serotyping
- e. Determination of pathogenicity

789. A patient was diagnosed with an injury to the middle third of the shoulder with an incomplete rupture of the median nerve. In addition to motor and sensory disorders below the injury site, the patient complains of an unbearable sharp burning pain. What is the nature of this pain?

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

790. A patient diagnosed with essential hypertension is taking enalapril. What is the mechanism of action of this hypotensive drug?

- a. Phosphodiesterase inhibitor
- b. Cyclooxygenase inhibitor
- c. Angiotensin-converting enzyme inhibitor



- d. Angiotensin receptor blocker
- e.  $\text{Ca}^{++}$  channel blocker

791. After a week of starvation, blood glucose levels maintain stability due to the following process:

- a. Glycolysis
- b. Tricarboxylic acid cycle
- c. Gluconeogenesis
- d. Glycogenolysis
- e. Glycogen phosphorylation

792. 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. Endoderm
- b. Sclerotome
- c. Dermatome
- d. Ectoderm
- e. Splanchnotome

793. 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. Saliva
- b. Wound contents

- d. Cerebrospinal fluid
- e. Blood

794. 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. Hyperosmolar hypohydration
- b. Hyperosmolar hyperhydration

- d. Isoosmolar hypohydration
- e. Hypoosmolar hyperhydration

795. 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 production of glucocorticoids
- b. Increased production of mineralocorticoids
- c. Decreased glucagon production
- d. Increased insulin production
- e. Decreased production of thyroid hormones

796. A patient diagnosed with glaucoma was prescribed a drug that lowers the intraocular pressure. What drug is it?

- a. Prozerin (Neostigmine)
- b. Anaprilin (Propranolol)
- c. Noradrenaline hydrotartrate
- d. Analgin (Metamizole sodium)
- e. Phenazepam

797. 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. Enter the bloodstream

d. Become absorbed by macrophages

e. Undergo lysis by the enzymes of foreign-body giant cells

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

a. Parasympathetic and metasymphathetic divisions of autonomic nervous system

b. Metasympathetic division of autonomic nervous system

c. Somatic nervous system

d. Sympathetic division of autonomic nervous system

e. Parasympathetic division of autonomic nervous system

799. 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. Gluconeogenesis

b. Anaerobic glycolysis

c. Decarboxylation of amino acids

d. Anaerobic glycogenolysis

e. Deamination of amino acids

800. 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. Novocainamide (Procainamide)

d. Prednisolone

e. Insulin

801. 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. Hepatitis C with history of hepatitis B

b. -

c. Hepatitis B relapse

d. Hepatitis B reinfection

e. Chronic hepatitis B with low replicative activity

802. 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. Polyarteritis nodosa

b. Psoriasis

c. Systemic lupus erythematosus

d. Dermatofibroma

e. Scleroderma

803. 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. Accumulation

b. Tachyphylaxis

c. Sensitization

d. -

e. Withdrawal syndrome

804. During a surgery on the posterior mediastinum there is a risk of damaging the nerves located near the esophagus. Name these nerves:

a. Glossopharyngeal nerves

b. Intercostal nerves

c. Vagus nerves

- d. Phrenic nerves
- e. Accessory nerves

805. 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, lunate, triquetral**
- b. Scaphoid, trapezoid, lunate
- c. -
- d. Scaphoid, trapezoid, hamate
- e. Trapezoid, hamate, lunate

806. 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. Typhus**
- b. Nodular periarteritis
- c. Sepsis
- d. Typhoid fever
- e. Systemic lupus erythematosus

807. A person's diet contains a large amount of carbohydrates. What structures can be detected in the cytoplasm of hepatocytes in this case?

- a. One big drop of fat
- b. Glycogen granules**
- c. Lipofuscin inclusions
- d. Increased number of free ribosomes
- e. Drops of fat

808. 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. Argininosuccinate
- b. Ornithine
- c. Carbamoyl phosphate**
- d. Urea
- e. Citrulline

809. 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. Oligodendroglioma
- b. Choroid papilloma
- c. Astrocytoma**
- d. Ganglioneuroma
- e. Ependymoma

810. A lymphocyte was infected with HIV (AIDS) retrovirus. What is the direction of information transmission in the cell in this case?

- a. mRNA > polypeptide > DNA
- b. RNA > DNA > mRNA > polypeptide**
- c. DNA > mRNA > polypeptide > DNA
- d. Polypeptide > RNA > DNA > mRNA
- e. DNA > polypeptide > mRNA

811. 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. Toxic damage
- b. Ionic imbalance
- c. Hypohydration of brain cells**
- d. Hyperhydration of brain cells (swelling)

e. Energy deficit

812. 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. Diffuse obstructive pulmonary emphysema

**b. Bullous pulmonary emphysema**

c. Senile pulmonary emphysema

d. Idiopathic pulmonary emphysema

e. Interstitial pulmonary emphysema

813. 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 sinus node**

d. Bile acid stimulation of the vagal receptors

e. Bile acid damage to the sinus node

814. 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. NK cells

b. Macrophages

c. Neutrophils

**d. B lymphocytes**

e. T lymphocytes

815. 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. The presence of Babes-Negri bodies

d. Exfoliation of the monolayer

e. Rounded cell degeneration

816. 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. Analgin (Metamizole)

**b. Promedol (Trimeperidine)**

c. Ketamine

d. Morphine

e. Codeine

817. 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. Deletion

e. Translocation

818. 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. Trichinellosis**

- b. Fascioliasis
- c. Taeniasis
- d. Taeniarhynchosis
- e. Opisthorchiasis

819. 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. Thalamus

- b. Hypothalamus
- c. Basal ganglia
- d. Cerebral cortex
- e. Cerebellum

820. 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 pyelonephritis

d. Acute glomerulonephritis

- e. Lipoid nephrosis

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

- a. Mucin
- b. Amylase
- c. Lingual lipase
- d. Nuclease

e. Lysozyme

822. Only one of these statements about the extraordinary excitation occurring in the ventricular myocardium is correct. Name the correct statement:

- a. It increases the automaticity of the sinoatrial node
- b. It increases the rate of excitation conduction in the working cardiomyocytes
- c. It decreases 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

823. 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. Proliferative inflammation
- b. Serous inflammation
- c. Catarrhal inflammation

d. Fibrinous inflammation

- e. Purulent inflammation

824. 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. Na<sup>+</sup> salts
- b. Pepsin
- c. Bile acids
- d. Hydrochloric acid

e. Enterokinase

825. 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. Haloperidol
- c. Lithium carbonate
- d. Piracetam

**e. Aminazine (Chlorpromazine)**

826. Birds migrate from cold regions to warm regions every year, each time arriving to the same area. What instinct drives them?

a. Protective instinct

**b. Orienting instinct**

c. Play instinct

d. Thermoregulating instinct

e. Ecological instinct

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

a. Insulin

b. Phenylephrine (Mesaton)

**c. Neostigmine (Proserin)**

d. Succinylcholine (Dithylin)

e. Heparin

828. 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 the causative agent from the cerebrospinal fluid

b. Method of isolation of a urine culture

c. Method of isolation of a stool culture

**d. Method of isolation of a blood culture**

e. Method of isolation of a bile culture

829. 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. triceps brachii**

b. M. coraco-brachialis

c. M. subscapularis

d. M. brachialis

e. M. biceps brachii

830. 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. Opisthorchiasis

c. Fascioliasis

d. Paragonimiasis

e. Dicrocoeliasis

831. 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. Phospholipase

b. Amylase

**c. Pancreatic lipase**

d. Pepsin

e. Enterokinase

832. A patient has undergone a surgery for installation of a mitral valve prosthesis. Choose the drug to prevent thrombus formation in this patient.

a. Acetylsalicylic acid

b. Dipyridamole

c. Paracetamol

**d. Warfarin**

e. Urokinase

833. 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 overdosage?

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

834. 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. Chronic myeloid leukemia
- d. Acute lymphocytic leukemia
- e. Acute myeloid leukemia

835. 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. Myristic acid
- b. Lauric acid
- c. Stearic acid
- d. Palmitic acid
- e. Linoleic acid

836. 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. Felon (panaritium)
- b. Abscess
- c. Furuncle
- d. Phlegmon
- e. Carbuncle

837. 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. IgE, IgM
- d. IgG, secretory IgA
- e. Serum IgA, IgM

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

839. 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. Adrenaline
- b. Insulin
- c. Testosterone

d. Somatotropin

**e. Cortisol**

840. 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. Sensitization
- b. Tachyphylaxis
- c. Allergy
- d. Tolerance

**e. Idiosyncrasy**

841. 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. Common fibular nerve
- b. Tibial nerve
- c. Obturator nerve
- d. Gluteal nerve

**e. Femoral nerve**

842. 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. transversus abdominis
- b. M. obliquus externus abdominis**
- c. M. obliquus internus abdominis
- d. M. psoas major
- e. M. rectus abdominis

843. 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. Golgi apparatus
- b. Mitochondria

**c. Lysosomes**

- d. Microbodies
- e. Endoplasmic reticulum

844. 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. Inversion
- b. Translocation**

- c. Polyploidy
- d. Duplication
- e. Deletion

845. 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. Granulomatosis
- b. Antibody-dependent cytotoxicity
- c. Anaphylaxis
- d. Immune complex cytotoxicity

**e. Cellular cytotoxicity**

846. A young man provisionally diagnosed with Klinefelter syndrome came to a genetic consultancy. What genetic method can be used to confirm the diagnosis?

- a. Population statistics
- b. Twin study
- c. Genealogy

d. Biochemistry

**e. Cytogenetics**

847. 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. Branched-chain alpha-keto acid dehydrogenase complex**

- b. Glycerol kinase
- c. UDP-glucuronyl transferase
- d. Glucose 6-phosphate dehydrogenase
- e. Aspartate aminotransferase

848. 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?

**b. Increased hydrostatic pressure in the venules**

- c. Decreased oncotic pressure in the capillaries
- d. Positive fluid balance
- e. Disturbed lymph efflux

849. Histological microslide of a certain endocrine gland shows epithelial bands that consist of chromophile (acidophilic, basophilic) and chromophobe cells. What organ is it?

- a. Pineal gland
- b. Thyroid gland
- c. Adrenal gland

**d. Adenohypophysis**

**e. Neurohypophysis**

850. 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. Fibrinogen to fibrin conversion
- d. Prothrombin to thrombin conversion
- e. Prothrombinase activation

851. 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. Pulmonary trunk and aorta**

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

852. 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. Bacteriological

**d. Serological**

**e. Allergy testing**

853. 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. X-linked agammaglobulinemia (Bruton disease)**

- b. DiGeorge syndrome
- c. Wiskott-Aldrich syndrome
- d. Hypogammaglobulinemia



e. Hereditary adenosine deaminase defect in T lymphocytes

854. 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. Working
- d. Metabolic

**e. Neuroparalytic**

855. 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. Albinism
- c. Cystinuria
- d. Histidinemia
- e. Galactosemia

856. 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. Hypergammaglobulinemia**

**b. Hypoalbuminemia**

- c. Hypoprothrombinemia
- d. Macroglobulinemia
- e. Hypocholesterolemia

857. 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. Drug dependence
- d. Idiosyncrasy
- e. Cumulation

858. 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. D and C
- b. A and B
- c. A

**d. B**

**e. C**

859. 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. Hemomelanin
- c. Hemosiderin
- d. Bilirubin

**e. Melanin**

860. Before a surgery the patient was prescribed a synthetic antiprotozoal drug for prevention of wound infection. The prescribed drug is highly effective against *Helicobacter pylori*. Name this drug:

**a. Metronidazole**

- b. Aciclovir
- c. Chingamin (Chloroquine)
- d. Isoniazid

e. Doxycycline hydrochloride

861. A patient diagnosed with chronic tuberculosis was prescribed a complex therapy. What antituberculosis medicine must be prescribed to the patient?

a. Beclometasone

b. Isoniazid

c. Butadion (Phenylbutazone)

d. Thymalin (Thymus extract)

e. Immunal

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

a. HBsAg

b. HCV

c. HBcAg

d. HAV

e. HDV

863. 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. Adaptation

b. Compensation

c. Regeneration

d. Proliferation

e. Inhibition

864. 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. Decreased  $K^+$  efflux

b. Increased  $K^+$  efflux

c. Increased  $Na^+$  influx

d. Decreased  $Na^+$  influx

e. Increased  $Ca^{2+}$  influx

865. 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. Depolarization of cardiomyocyte membranes

c. Increased conduction velocity in the AV node

d. Decreased duration of action potential

e. Hyperpolarization of cardiomyocyte membranes

866. 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. 47, XXY

b. 47, XY, +21

c. 47, XY, +18

d. 45, X0

e. 47, XYY

867. 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. Patella

b. Fibula

c. Tibia

d. Talus

e. Femur

868. 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. Bronchial asthma
- b. Postinflammatory pneumosclerosis

**c. Multiple bronchiectasis**

- d. Dust-induced pneumosclerosis
- e. Chronic bullous emphysema

869. 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. Septic nephritis

**b. Renal amyloidosis**

- c. Chronic glomerulonephritis
- d. Subacute glomerulonephritis
- e. Acute necrotizing nephrosis

870. 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. Phenylketonuria
- b. Tay-Sachs disease
- c. Pompe disease

**d. Von Gierke disease**

- e. Alkaptonuria

871. 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. Cervical mucus cells
- b. Columnar epithelial cells

**c. Paneth cells**

- d. Endocrine cells
- e. Exocrine goblet cells

872. 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. iliofemorale
- b. Lig. ischiofemorale
- c. Lig. transversum acetabuli

**d. Lig. capitis femoris**

- e. Zona orbicularis

873. 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. Masticatory muscles
- b. Suprahyoid muscles
- c. Strap muscles
- d. Deep muscles of the neck

**e. Mimic muscles**

874. A study of residual nitrogen shows that urea nitrogen is significantly reduced. What organ is affected, as indicated by this characteristic?

- a. Stomach

**b. Liver**

- c. Intestine
- d. Heart
- e. Brain

875. 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. Internal carotid artery
- b. Facial artery
- c. External jugular vein
- d. Facial vein

**e. Internal jugular vein**

876. A woman has clinical diagnosis of gonorrhea. What type of analysis can be used to confirm this diagnosis?

- a. Bacteriophage test
- b. Microscopy of pathologic material**
- c. Immobilization reaction
- d. Inoculation of test animals
- e. Hemagglutination reaction

877. 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. Lysosomes
- b. Ribosomes
- c. Golgi apparatus

**d. Peroxisomes**

e. Mitochondria

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

879. A patient was hospitalized with the provisional diagnosis of typhoid fever. The disease onset was three days ago. The temperature is 39°C. What method of laboratory diagnostics must be used to confirm this diagnosis?

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

880. 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. Protective function
- b. Impulse conduction
- c. Endocrine function

**d. Cardiac contractions**

e. Regenerative function

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

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

883. 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. Thyroxine
- b. Somatotropin
- c. Cortisol
- d. Glucagon
- e. Insulin

884. 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. Crohn's disease
- b. Nonspecific ulcerative colitis
- c. Typhoid fever

- d. Dysentery
- e. Salmonellosis

885. 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. -
- b. It is an RNA polymerase activator
- c. It is a thymidylate synthase inhibitor
- d. It is an RNA polymerase inhibitor
- e. It is a dihydrofolate reductase inhibitor

886. 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. Chlorine channels
- b. Sodium channels
- c. Hydrogen channels
- d. Calcium channels

- e. Potassium channels

887. 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. Increased secretion of vasopressin
- b. Decreased secretion of natriuretic factor
- c. Increased secretion of aldosterone
- d. Decreased secretion of vasopressin

- e. Decreased secretion of aldosterone

888. 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. Shigellae
- b. Escherichia
- c. Salmonellae
- d. Streptococci
- e. Staphylococci

889. 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. Increase of the number of ion channels
- c. Cell division
- d. Cell destruction
- e. Increase of the cell surface area

890. 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 constriction**
- b. No reaction
- c. Arterial and venous dilation
- d. Arterial dilation
- e. Venous dilation

891. 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. Sarcoidosis
- b. Lung cancer
- c. Lymphosarcoma
- d. Lymphogranulomatosis**
- e. Lymphocytic leukemia

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

893. 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. Sodium chloride
- b. Potassium chloride**
- c. Sodium bicarbonate
- d. Calcium chloride
- e. Glucose

894. 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. Sarcoma metastasis
- b. Glioblastoma
- c. Medulloblastoma**
- d. Medullary sarcoma
- e. Cancer metastasis

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

- a. Thromboplastin**
- b. Heparin anti-factor
- c. Heparin
- d. Mucin
- e. Lysozyme

896. 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. Triiodothyronine

d. Aldosterone

e. Somatostatin

897. 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. Exudative

b. With formation of polyps and pointed condylomas

c. Interstitial

d. Granulomatous

e. Mixed type

898. 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 increase

b. Respiration depth will increase

c. Respiration rate will decrease

d. Respiration depth will decrease

e. Respiration rate and depth will increase

899. 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. McArdle disease

b. Hartnup disease

c. Niemann-Pick disease

d. Maple syrup urine disease

e. Von Gierke disease

900. 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. Infarction encapsulation

b. Septic disintegration of the infarction

c. Aseptic autolysis of the infarction

d. Impending infarction

e. Demarcation inflammation around the infarction

901. Decarboxylase activity leads to formation of biogenic amines. What biogenic amine triggers the multistage mechanism that regulates the HCl secretion in the stomach?

a. Dopamine

b. Histamine

c. Serotonin

d. Glutamine

e. GABA

902. 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. Hormone-induced increase in enzyme activity

b. Damage to cell membranes and release of enzymes into the blood

c. Pyridoxine deficiency

d. Amino acid breakdown acceleration in tissues

e. Amino acid synthesis acceleration in tissues

903. 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. Castle factor**
- c. Pepsin
- d. Gastrin
- e. Hydrochloric acid

904. 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. Inferior nasal meatus
- b. Middle nasal meatus**
- c. Common nasal meatus
- d. Superior nasal meatus
- e. Nasopharyngeal meatus

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

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

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

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

- a. Sinus bradycardia
- b. Vertigo
- c. Bronchial asthma

**d. Glaucoma**

- e. Hypotension

908. 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. Bacteriophage
- b. Antidiphtheric antitoxic serum**
- c. Eubiotic
- d. Diphtheria toxoid
- e. Interferon

909. 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. Hidradenoma
- b. Epidermal carcinoma
- c. Trichoepithelioma
- d. Basal cell carcinoma**
- e. Syringoadenoma

910. 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. Necronephrosis
- b. Pyelonephritis
- c. Acute glomerulonephritis
- d. Tubulointerstitial nephritis**
- e. Nephrotic syndrome

911. 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. Minkowski-Chauffard disease
- b. Hemoglobinosis
- c. Thalassemia
- d. Sickle cell anemia**
- e. Favism

912. 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 parietal and visceral laminae of the tunica vaginalis of the testicle**
- b. Between the skin and tunica dartos
- c. Between the skin and cremaster muscle
- d. Between the tunica dartos and internal spermatic fascia
- e. Between the internal spermatic fascia and tunica vaginalis of the testicle

913. 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. Ophthalmic branch of the trigeminal nerve
- b. Mandibular branch of the trigeminal nerve
- c. Maxillary branch of the trigeminal nerve**
- d. Chorda tympani branching from the facial nerve
- e. Greater petrosal nerve branching from the facial nerve

914. 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. Ethmoid bone
- b. Frontal bone
- c. Occipital bone
- d. Sphenoid bone**
- e. Temporal bone

915. 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. Adrenaline
- c. Parathyroid hormone**
- d. Thyroxine
- e. Triiodothyronine

916. *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. Determining the sucrolytic properties
- b. Measuring the plasma coagulase activity
- c. Measuring the lecithinase activity
- d. Determining the hemotoxins
- e. Detection of the enterotoxin**

917. 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. Glucocorticoids**
- b. H<sub>2</sub>-antagonists
- c. Antibiotics

- d. Antihistamines
- e. Antihypertensive agents

918. A patient takes choleretic drugs. What process, besides bile secretion, do they stimulate?

- a. Water absorption
- b. Gastric motility
- c. Secretion of gastric juice
- d. Secretion of pancreatic juice
- e. Intestinal motility

919. 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. Serous peritonitis
- c. Peritoneal commissures

d. Fibrinopurulent peritonitis

- e. Serofibrinous peritonitis

920. 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. Hypercapnia
- e. Toxic effect of oxygen

921. 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 carbohydrates
- b. Absorption of amino acids
- c. Glycerin absorption

d. Emulsification of fats

- e. Digestion of proteins

922. 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. Apneustic
- c. Dysregulatory
- d. Obstructive
- e. Reflex

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

- a. Balantidiasis
- b. Typhoid fever
- c. Amoebiasis

d. Dysentery

- e. Cholera

924. 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. Infraspinatus muscle
- b. Biceps brachii
- c. Teres major muscle
- d. Brachialis muscle

e. Deltoid muscle

925. 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. Mantle zone
- b. Brain sinuses

**c. Germinal center of a lymph node**

- d. Paracortical zone
- e. Periarterial zone

926. 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. Common nasal meatus

**b. Middle nasal meatus**

- c. Choanae
- d. Inferior nasal meatus
- e. Superior nasal meatus

927. 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. Aminazine (Chlorpromazine)**

- b. Sydnocarb (Mesocarb)
- c. Diphenin (Phenytoin)
- d. Chlordiazepoxide
- e. Imizin (Imipramine)

928. 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. Laryngeal diphtheria

**c. Scarlet fever**

- d. Measles
- e. Meningococcal nasopharyngitis

929. 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. Increased vascular tone
- b. Decreased vascular tone
- c. Decreased diastolic blood flow to the heart

**d. Impaired pumping function of the heart**

- e. Blood deposition in the veins

930. 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. Patau syndrome
- c. Turner syndrome

**d. Klinefelter syndrome**

- e. Trisomy X

931. 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. Alloxim
- b. Atropine sulfate

**c. Unithiol (Dimercaptopropansulfonate)**

- d. Naloxone
- e. Proserin (Neostigmine)

932. 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. Shigellosis
- b. Campylobacter-induced enterocolitis
- c. Giardiasis
- d. Amoebiasis

e. Typhoid fever

933. 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. Iron
- b. Magnesium
- c. Sodium
- d. Phosphorus
- e. Potassium

934. 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. Inoculation of laboratory animals
- b. Serological identification of the causative agent
- c. Phage typing of the obtained culture
- d. Allergy skin test
- e. Toxicogenicity testing

935. 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. Klinefelter syndrome
- c. Patau syndrome
- d. Edwards syndrome
- e. Morris syndrome (androgen insensitivity)

936. 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. QRS complex
- b. RR interval
- c. ST segment

d. PQ interval

e. R wave

937. 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 C
- b. Vitamin P
- c. Vitamin H
- d. Vitamin E

e. Vitamin K

938. 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. latum uteri
- b. Lig. ovarii proprium
- c. Lig. cardinale
- d. Lig. suspensorium ovarii
- e. Lig. umbilicale laterale

939. 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. Carnosine
- c. Glutathione**
- d. Retinol
- e. Anserine

940. 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. Enteroendocrine cells
- b. Gastric chief cells
- c. Gastric parietal cells**
- d. Mucocytes
- e. -

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

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

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

944. 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. Meningococcemia**
- d. Scarlet fever
- e. Typhus

945. 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. trigeminus**
- d. N. glossopharyngeus and n. vagus
- e. N. vagus

946. 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) maxillaris

c. A) auricularis posterior

d. A) occipitalis

e. A) facialis

947. 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. Processing

c. Post-translational modification

d. Translation

e. Transcription

948. 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. Previsceral space

b. Thoracic cavity, anterior mediastinum

c. Thoracic cavity, posterior mediastinum

d. Suprasternal interaponeurotic space

e. Thoracic cavity, middle mediastinum

949. A patient has been hospitalized with the provisional diagnosis of diphyllorhynchiasis. What food products could have caused this disease?

a. Vegetables and fruits

b. Fish

c. Pork

d. Beef

e. Milk and eggs

950. Due to gamma-radiation a segment of DNA chain rotated 180° What mutation occurred in the DNA?

a. Deletion

b. Inversion

c. Translocation

d. Replication

e. Duplication

951. 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 posterolateral 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. Abscess

b. Gangrene

c. Emphysema

d. Carnification

e. Atelectasis

952. 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. Thyroxine

b. Calcitonin

c. Parathyrin

d. Triiodothyronine

e. Thyroidin

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

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

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

955. 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. Mucus
- b. Gastrin
- c. Trypsin
- d. Hydrochloric acid**
- e. Pepsin

956. 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. Tissue basophils
- b. Eosinophilic granulocytes
- c. Lymphocytes
- d. Macrophages**
- e. Platelets

957. 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. Moderate physical exertion
- b. Intense physical exertion
- c. Holding one's breath
- d. High altitude
- e. Voluntary hyperventilation**

958. The diseases listed below are associated with genetic factors. Hereditary predisposition is observed in the following pathology:

- a. Daltonism
- b. Phenylketonuria
- c. Huntington's chorea
- d. Diabetes mellitus**
- e. Sickle cell anemia

959. 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. Naproxen
- b. Paracetamol**
- c. Acetylsalicylic acid
- d. Ibuprofen
- e. Phenylbutazone

960. 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. Fourfold increase in number of antibodies to Epstein-Barr virus was detected
- b. IgM antibodies to Epstein-Barr virus were detected**
- c. Cytomegalovirus antibodies were detected
- d. IgM antibodies to herpes simplex virus were detected
- e. Herpesvirus was isolated

961. 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. Distal part of nephron
- c. Proximal part of nephron
- d. Renal corpuscle
- e. Juxtaglomerular apparatus**

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

- a. Neutrophils
- b. Lymphocytes
- c. Monocytes

**d. Platelets**

e. Eosinophils

963. 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. Adenovirus infection
- b. Toxoplasmosis
- c. Meningococcal infection

**d. Poliomyelitis**

e. Cytomegaly

964. 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. Adenoviruses
- b. Enteroviruses
- c. Hepatitis A virus

**d. Hepatitis B virus**

e. Hepatitis E virus

965. 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. Right and left coronary arteries
- d. Circumflex branch of the left coronary artery
- e. Anterior interventricular branch of the left coronary artery

966. 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. Tay-Sachs disease

**b. Phenylketonuria**

- c. Hemophilia
- d. Achondroplasia
- e. Color blindness

967. 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 diencephalon
- d. In spinal cord
- e. In cerebral cortex

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

a. Nitrosamines

**b. Polycyclic aromatic hydrocarbons**



- c. Amines
- d. Biological carcinogens
- e. Amino-azo compounds

969. After hyperventilation an athlete developed a brief respiratory arrest. It occurred due to the following changes in the blood:

- a. Decrease of CO<sub>2</sub> pressure
- b. Increase of CO<sub>2</sub> pressure
- c. Decrease of pH
- d. Increase of CO<sub>2</sub> and O<sub>2</sub> pressure
- e. Decrease of O<sub>2</sub> pressure

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

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

971. Hematologic study shows the following pattern: erythrocytes -  $2,8 \cdot 10^{12}/L$ , Hb - 80 g/L, color index - 0.85, reticulocytes - 0,1%, platelets - 160 thousand per microliter, leukocytes -  $60 \cdot 10^9/L$ . 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. Chronic myeloleukemia
- c. Hemolytic anemia
- d. Undifferentiated leukemia
- e. Acute myeloleukemia

972. 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. Diacylglycerol
- c. Nitrous oxide

d. cAMP

e. cGMP

973. A patient diagnosed with diabetes mellitus presents with increased levels of ketone bodies in the blood. From what compound are ketone bodies synthesized?

- a. Butyryl-CoA
- b. Succinyl-CoA

c. Acetyl-CoA

d. Oxyacyl-CoA

e. Acyl-CoA

974. 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 secretion in the renal tubules
- c. Increased glomerular filtration
- d. Increased creatinine reabsorption
- e. Increased creatinine production in the muscles

975. 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. Rickettsia typhi
- b. Borrelia recurrentis
- c. Treponema pallidum

- d. Plasmodium vivax
- e. Leptospira interrogans

976. 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. Lysine
- c. Histidine
- d. Methionine

**e. Glycine**

977. 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. Genotypic variability
- b. Modification variability**
- c. Somatic variability
- d. Combinative variability
- e. Mutational variability

978. 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. Flea lesions
- b. Allergy

**c. Demodecosis**

- d. Pediculosis
- e. Sarcoptes scabiei lesions

979. 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. Nifedipine**

- b. Amlodipine
- c. Lercanidipine
- d. Felodipine
- e. Lacidipine

980. 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. Falx cerebelli
- c. Falx cerebri

**d. Tentorium cerebelli**

- e. Septum pellucidum

981. 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. Niacin
- c. Riboflavin
- d. Biotin
- e. Ascorbic acid

982. 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

983. 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. Cytogenetic method

**b. Biochemical method**

- c. Population statistics
- d. Somatic cell hybridization
- e. Immunological method

984. Hypovitaminosis C causes decreased formation of organic matrix and disturbs the collagen synthesis, because this vitamin takes part in the processes of:

**a. Proline hydroxylation**

- b. -
- c. Arginine hydroxylation
- d. Lysine carboxylation
- e. Proline carboxylation

985. 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. Bitter
- c. Sour

**d. Sweet**

- e. Sour and salty

986. 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 urobilinogen
- b. Decreased levels of unconjugated bilirubin

**c. Accumulation of unconjugated bilirubin**

- d. Decreased stercobilin levels
- e. Decreased levels of conjugated bilirubin

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

**a. Glucocorticoids**

- b. Sex hormones
- c. Adrenaline
- d. Somatotropin
- e. Mineralocorticoids

988. 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. Stratified non-keratinized epithelium
- b. Stratified keratinized epithelium

**c. Pseudostratified ciliated epithelium**

- d. Unstratified prismatic epithelium
- e. Pseudostratified transitional epithelium

989. 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. Ventromedial nucleus of the hypothalamus**

- c. Amygdaloid nuclei
- d. Globus pallidus
- e. Hippocampus

990. 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. Orbicularis oris muscle
- b. Risorius muscle
- c. Masseter muscle
- d. Buccinator muscle
- e. Zygomaticus major muscle

991. 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. Refractoriness
- b. Plasticity
- c. Contractility
- d. Automatism
- e. Excitability

992. 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. Fibrosarcoma
- c. Fibroma
- d. Cancer
- e. Myoma

993. 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. Non-keratinized stratified squamous epithelium
- b. Pseudostratified epithelium
- c. Keratinized stratified squamous epithelium
- d. Stratified columnar epithelium
- e. Stratified cuboidal epithelium

994. 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. Apically granular cells
- b. Columnar cells with a border
- c. Endocrine cells
- d. Columnar cells without a border
- e. Goblet cells

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

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

997. 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. Famotidine**

- c. Ranitidine
- d. Roxatidine
- e. Omeprazole

998. 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. Rice

**b. Wheat**

- c. Eggs
- d. Wild strawberries
- e. Corn

999. 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. Regulator gene
- b. Operator gene
- c. Structural gene

**d. Promoter**

e. Primary transcript

1000. 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. Proteases
- b. Albumins
- c. Interleukins
- d. Integrins

**e. Interferons**

1001. 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. Atrial paroxysmal tachycardia**

- b. Ciliary arrhythmia
- c. Ventricular extrasystole
- d. Atrial flutter
- e. Ventricular fibrillation

1002. 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. Thrombosis
- b. Fat embolism
- c. Tissue embolism

**d. Thromboembolism**

e. Foreign body embolism

1003. A patient, who works in an underground mine, has developed pulmonary fibrosis. What can be detected by spirometric testing in this case?

- a. Increased airway resistance
- b. Normal airway resistance
- c. Decreased vital capacity of the lungs**
- d. Increased vital capacity of the lungs
- e. Decreased airway resistance

1004. 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. Trophic**

- c. Vegetative
- d. Motor
- e. Sensory

1005. 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. Noradrenaline
- c. Vasopressin
- d. Glucagon
- e. Atrial natriuretic factor

1006. 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. I degree AV block
- c. Sinoauricular block
- d. II degree AV block
- e. Sinus bradycardia

1007. Insufficient production of mineralocorticoids (Addison disease) is accompanied by muscle weakness caused by increased excretion of the following ions with urine:

- a. Calcium
- b. Hydrogen
- c. Potassium
- d. Magnesium
- e. Sodium

1008. 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. Senile amyloidosis
- b. Diffuse hyalinosis

c. Secondary amyloidosis

- d. Local tumor-like amyloidosis
- e. Idiopathic amyloidosis

1009. A doctor observes that during the first breath taken in by a newborn the volume of the exhaled air is 2-3 times smaller than the volume of the inhaled air. Why does it happen?

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

1010. A patient suffers from peptic ulcer disease with ulcer localization in the duodenum. He complains of heartburn, nausea, and periodic vomiting. What H<sub>2</sub>-blocker should be prescribed in this case?

- a. Isovaleric acid
- b. Diphenhydramine
- c. Atropine sulfate
- d. Perphenazine
- e. Famotidine

1011. 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. biceps brachii

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

1012. 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. Low blood pressure
- b. Skin pallor
- c. Acrocyanosis development
- d. Increased perspiration
- e. Tachycardia**

1013. 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. Linearly accelerated motion
- b. Sound
- c. Angularly accelerated motion**
- d. Cutaneous
- e. Photic

1014. Histological microslide of the wall of the eyeball shows a structure with no blood vessels. This morphological feature is characteristic of:

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

1015. Leukotrienes belong to cellular mediators of inflammation. These bioactive substances form as a result of enzyme action. Name this enzyme:

- a. Cyclooxygenase 2
- b. Cyclooxygenase 1
- c. Lipxygenase**
- d. Thromboxane synthetase
- e. Phospholipase A2

1016. 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. Rifampicin**
- b. Ethambutol
- c. Isoniazid
- d. Streptomycin
- e. Sodium aminosalicilate

1017. Energy is necessary for the work of cardiac muscle. What substrate is the main source of energy in the working muscle?

- a. Pyruvic acid
- b. Amino acids
- c. Lactic acid
- d. Ketoglutaric acid
- e. Fatty acids**

1018. 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. Flaccid paralysis
- b. Peripheral paralysis

c. Extraparalytic paralysis

d. Central paralysis

e. Reflex paralysis

1019. 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. Chloxyl

b. Piperazine adipinate

c. Mebendazole

d. Pyrantel

e. Levamisole

1020. 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. -

b. Tuberculosis

c. Echinococcus

d. Abscess

e. Cyst

1021. 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. Fibrocytes

b. Chondrocytes

c. Fibroblasts

d. Osteoblasts

e. Osteoclasts

1022. 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. Delayed growth

b. Delayed mental development

c. Hyperglycemia

d. Increased diuresis

e. Decreased diuresis

1023. 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. Identification of the pathogen to prevent a nosocomial infection

d. Identification of the pathogenic staphylococcus and determining the antibiotic resistance profile

e. Confirmation of the diagnosis of anaerobic infection

1024. 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. Para-aminosalicylic acid derivative

b. Streptomycin group antibiotic

c. Semi-synthetic antibiotic

d. Para-aminobenzoic acid derivative

e. Isonicotinic acid hydrazide derivative

1025. 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. Osteosarcoma

b. Metastasis of pulmonary carcinoma

c. Acute osteomyelitis



d. Tuberculous osteomyelitis

**e. Multiple myeloma**

1026. Based on the clinical parameters, the patient has been prescribed pyridoxal phosphate. This drug is recommended for correction of the following processes:

- a. Deamination of purine nucleotides
- b. Oxidative decarboxylation of keto acids
- c. Protein synthesis

**d. Transamination and decarboxylation of amino acids**

- e. Synthesis of purine and pyrimidine bases

1027. A patient developed hyperchromic anemia after gastric resection. What drug must be prescribed in this case?

- a. Coamid
- b. Ferrum Lek
- c. Ferbitol
- d. Folic acid

**e. Cyanocobalamin**

1028. 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. Xanthine oxidase
- b. Leucine aminopeptidase
- c. Carbonic anhydrase

**d. Ceruloplasmin**

- e. Alcohol dehydrogenase

1029. 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. Cumulation**

- b. Tolerance
- c. Potentiation
- d. Dependence
- e. Sensitization

1030. 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. Co-trimoxazole
- b. Nitroxoline

**c. Metronidazole**

- d. Oxacillin sodium
- e. Gentamicin

1031. 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. Fever
- b. Increased activity of aspartate aminotransferase in the blood
- c. Leukocytosis

**d. Increased levels of blood autoantibodies**

- e. Increased ESR

1032. A 63-year-old patient develops angina pectoris attacks during physical exertion. What group of drugs should be prescribed for their prevention?

- a. Cardiotonics
- b. Antiarrhythmic drugs

**c. Antianginal drugs**

- d. Respiratory stimulants
- e. Antihypertensive drugs

1033. A patient has been diagnosed with atrophy of masticatory muscles. This group of muscles is innervated by branches of the following cranial nerve:

- a. Motor branches of the VII cranial nerve
- b. Hypoglossal nerve
- c. Second branch of the trigeminal nerve
- d. Third branch of the trigeminal nerve**
- e. First branch of the trigeminal nerve

1034. 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. Lactose
- b. Galactose**
- c. Sucrose
- d. Ribose
- e. Maltose

1035. 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 type I cells**
- b. Microvillous epithelial cells
- c. Alveolar macrophages
- d. Clara cells
- e. Alveolar type II cells

1036. 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. Phagolysability
- b. Detection of volutine granules in the causative agent
- c. Hemolytic ability of the pathogen
- d. Toxigenicity test**
- e. Cystinase test

1037. A patient with a chronic pulmonary disease developed restrictive respiratory failure. What is the most likely cause of this development?

- a. Disturbed mucociliary transport and accumulation of mucus
- b. Foreign body in the bronchial lumen
- c. Laryngospasm
- d. Airway compression due to a tumor
- e. Inflammatory processes in the lungs**

1038. 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. Past history of dysentery
- b. Confirms diagnosis of dysentery**
- c. Non-specific reaction
- d. Excludes diagnosis of dysentery
- e. Vaccination reaction

1039. 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. Degeneracy
- b. Collinearity**
- c. Universality
- d. Non-overlapping
- e. Specificity

1040. A patient presents with impaired sensitivity on the lateral surface of the forearm. What nerve is damaged in this case?

- a. N. radialis
- b. N. axillaris
- c. N. musculocutaneus
- d. N. medianus
- e. N. ulnaris

1041. After a prolonged protein-free diet a student developed edema. Her condition indicates a decrease in the following blood protein fractions:

- a. Globulins
- b. Plasminogen
- c. Fibrinogen
- d. Albumins
- e. Transferrin

1042. A patient diagnosed with urticaria was prescribed an antihistamine dimedrol (diphenhydramine). What is the mechanism of action of this drug?

- a. Immunoglobulin synthesis
- b. Histamine release
- c. B lymphocyte activation
- d. Formation of antigen-antibody complex
- e. Interaction of histamine with receptors in organs

1043. 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. Juxtaalveolar receptors
- b. Central chemoreceptors
- c. Pulmonary stretch receptors
- d. Irritant receptors
- e. Peripheral chemoreceptors

1044. 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. Cardiolipin
- b. Carbamoyl phosphate
- c. Carnosine
- d. Carnitine
- e. Creatinine

1045. 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. M. sphincter pupillae
- b. M. dilatator pupillae
- c. Corpus vitreum
- d. Lig. pectinatum iridis
- e. M. ciliaris

1046. 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. Creatine
- b. Myoglobin
- c. Lactate
- d. Myosin
- e. Alanine

1047. 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. Syphilis

b. Tuberculosis

c. Cytomegalovirus infection

d. Leprosy

e. Plague

1048. 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. Sodium

c. Calcium

d. Potassium

e. Magnesium

1049. 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. Stenosis

b. Duodenitis

c. Penetration

d. Hemorrhage

e. Malignization

1050. A proton pump inhibitor has been prescribed to a patient diagnosed with hypersecretory gastritis. What is the physiological reasoning behind this prescription?

a. The metabolism of parietal cells decreases

b. The influx of  $H^+$  ions into the gastric cavity decreases

c. The influx of  $H^+$  ions into parietal cells decreases

d. The influx of  $Cl^-$  ions into the gastric cavity decreases

e. The  $K^+/Na^+$  pump functioning is blocked

1051. 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. Chlorine ions

b. Cholesterol

c. Acetylcholine

d. Catecholamines

e. Adenosine

1052. 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. Red nuclei

b. Medial geniculate nuclei

c. Lateral geniculate nuclei

d. Superior colliculi of the corpora quadrigemina

e. Inferior colliculi of the corpora quadrigemina

1053. 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. Venous hyperemia

c. Ischemia

d. Postischemic arterial hyperemia

e. Ischemic stasis

1054. Examination of a man detected athetosis and chorea. The doctor suspects damage to the following structures of his central nervous system:

a. Cerebellum

- b. Medulla oblongata
- c. Hypothalamus

d. Corpus striatum

- e. Limbic system

1055. 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. Agglutination test

c. Thermoprecipitation test

- d. Mantoux test

- e. Hemagglutination inhibition test

1056. 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. Protective
- b. Pepsinogen secretion
- c. Secretion of  $\text{Cl}^-$  ions
- d. Endocrine

e. Epithelial regeneration

1057. In the hematology unit a patient with leukemia was prescribed 5-Fluorouracil. This drug:

- a. Inhibits transcription
- b. Stimulates DNase

c. Inhibits DNA synthesis

- d. Inhibits translation

- e. Catalyzes replication

1058. An experiment was conducted to measure the skin sensitivity threshold. What patches of skin have the highest sensitivity threshold?

- a. Shin
- b. Shoulder
- c. Dorsal surface of the hand

d. Back

- e. Face

1059. Inhibition of nociceptive information occurs with the participation of many mediators, except:

a. Glutamate

- b. Serotonin
- c. Endorphin
- d. Noradrenaline
- e. GABA

1060. 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 glomerulonephritis
- b. Renal amyloidosis

c. Acute pyelonephritis

- d. Polycystic kidney disease
- e. Nephrolithiasis

1061. 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. Fluconazole
- b. Metronidazole

c. Albendazole

- d. Doxycycline
- e. Chingamine (Chloroquine)

1062. 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. Trichomoniasis
- b. Toxoplasmosis
- c. Amebiasis
- d. Balantidiasis
- e. Lambliasis**

1063. 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. Hypoxic hypoxia
- b. Respiratory hypoxia
- c. Tissue hypoxia
- d. Circulatory hypoxia**
- e. Hemic hypoxia

1064. 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. Tetracycline
- b. Quinine
- c. Chingamin (Chloroquine)**
- d. Erythromycin
- e. Emetine hydrochloride

1065. 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. Heparin
- c. Nitroglycerin
- d. Isadrinum (Isoprenaline)
- e. Metoprolol

1066. Because of the violation of the safety rulew while working with organophosphorus insecticide, a worker has developed bronchospasm. Which of the listed broncholytics is indicated in this case?

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

1067. One of the causes of pernicious anemia is the disturbed synthesis of transcrrin - Castle's intrinsic factor - in the parietal cells of the stomach. What substance is called Castle's extrinsic factor?

- a. Riboflavin
- b. Cobalamin**
- c. Folic acid
- d. Biotin
- e. Pyridoxine

1068. Spirogram analysis shows decreased depth and frequency of respirations in the person, which in turn leads to decrease in the:

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

1069. 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 transversus

d. Sinus rectus

e. Sinus sagittalis inferior

1070. 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 increases the toxicity of the antibiotic

b. It disturbs the digestive processes

**c. It slows down absorption of the antibiotic**

d. It increases the risk of dysbacteriosis

e. Dairy products will not be digested

1071. A patient with diabetes mellitus developed a diabetic coma because of an acid-base imbalance. What type of imbalance occurred in this case?

**a. Metabolic acidosis**

b. Respiratory acidosis

c. Metabolic alkalosis

d. Nongaseous alkalosis

e. Mixed alkalosis

1072. 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. Hemolytic jaundice

b. Gilbert's syndrome

**c. Obstructive jaundice**

d. Parenchymatous jaundice

e. Jaundice of the newborn

1073. 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. Pulmonary tissues

**b. Cardiac muscle**

c. Hepatic tissues

d. Skeletal muscles

e. Smooth muscles

1074. 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. Problematic lymphatic efflux

**b. Increased capillary permeability**

c. Increased blood hydrostatic pressure in the capillaries

d. Increased interstitial fluid oncotic pressure

e. Decreased blood oncotic pressure

1075. 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. Biotin

b. Cholesterol

c. Alanine

d. Acetic acid

**e. Methionine**

1076. 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. Primary B cell deficiency

b. Thymus hyperplasia

c. Combined immunodeficiency

**d. Thymus hypoplasia**

e. Primary T cell deficiency

1077. 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**

1078. 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 cholesterol levels

b. Increased lactic acid levels

c. Decreased levels of blood proteins

d. Increased number of ketone bodies

**e. Increased number of oxygen radicals and activation of lipid peroxidation**

1079. 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. Replication

c. Transcription

d. Splicing

**e. Translation**

1080. 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. Calcium chloride

c. Lithium carbonate

d. Sodium bicarbonate

e. Sodium chloride

1081. 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. Catarrhal inflammation

**b. Proliferative granulomatous inflammation**

c. Proliferative interstitial inflammation

d. Abscess

e. Ichorous inflammation

1082. 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. Hypofunction of the adrenal medulla

b. Cushing syndrome

**c. Addison's disease**

d. Acute adrenocortical insufficiency

e. Conn's syndrome

1083. 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. Disturbed microcirculation

b. Secondary alteration



**c. Proliferation**

d. Exudation

e. Primary alteration

1084. The Gerontology Institute recommends older people to take vitamin complexes that contain vitamin E) What is the main function of this vitamin?

a. Antiscorbutic

**b. Antioxidant**

c. Antihemorrhagic

d. Antidermatitic

e. Antineuritic

1085. 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. Secondary hyperaldosteronism

**b. Cushing syndrome**

c. Conn syndrome

d. Pheochromocytoma

e. Primary hyperaldosteronism

1086. Phenylketonuria belongs to the following group of molecular metabolic diseases:

a. Disorders of carbohydrate metabolism

b. Hereditary diseases of lipid metabolism

**c. Disorders of amino acid metabolism**

d. Hereditary diseases of connective tissue metabolism

e. Disorders of mineral metabolism

1087. 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**

1088. During a surgery, curare-like drugs are used to induce myorelaxation in the patient. What is the mechanism of their action?

a. Blockade of acetylcholine release from the presynaptic compartment

b. Blockade of muscarinic cholinergic receptors in smooth muscles

c. Blockade of excitation conduction through nerve fibers

d. Blockade of noradrenaline release from the presynaptic compartment

**e. Blockade of nicotinic cholinergic receptors in skeletal muscles**

1089. 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. Positive fluid balance

b. Hypoproteinemia

**c. Elevated filtration pressure**

d. Decreased gradient of osmotic pressure between blood and tissue

e. Disturbed humoral regulation of water-mineral balance

1090. 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 permeability of the capillaries**

b. Disturbed lymph efflux

c. Increased blood oncotic pressure

d. Increased capillary hydrostatic pressure

e. Increased interstitial oncotic pressure

1091. A man suffers from cortical blindness. In this case, thrombosis developed in the following

artery:

- a. Posterior communicating artery
- b. Posterior cerebral artery**
- c. Anterior choroid artery
- d. Medial cerebral artery
- e. Anterior cerebral artery

1092. 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. Ligg. interspinalia
- b. Lig. supraspinale
- c. Lig. longitudinale posterius
- d. Ligg. flava**
- e. Ligg. intertransversaria

1093. 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. Lungs
- b. Kidneys
- c. Spleen
- d. Heart
- e. Liver**

1094. 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. Klinefelter syndrome
- b. Down syndrome
- c. Turner syndrome**
- d. Trisomy X
- e. Morris syndrome

1095. 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. Spirilla
- b. Campylobacter
- c. Treponema
- d. Leptospira**
- e. Borrelia

1096. 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. Sesamoid**
- b. Flat
- c. Mixed
- d. Pneumatic
- e. Tubular

1097. What pathology can be caused by hereditary disorders of intestinal absorption and renal tubular reabsorption of tryptophan and other neutral acids?

- a. Von Gierke disease
- b. Hartnup disease**
- c. Hers disease
- d. Huntington disease
- e. Parkinson disease

1098. 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. Inferior wall

b. Superior wall

c. Anterior wall

d. Lateral wall

e. Medial wall

1099. The Wasserman reaction is markedly positive (++++ ) in a 30-year-old man. What infectious disease is diagnosed using the Wasserman reaction?

a. Poliomyelitis

b. Brucellosis

c. Tuberculosis

d. Syphilis

e. Influenza

1100. A 55-year-old patient underwent a kidney transplantation. What immunotropic agent should be prescribed in this case?

a. Levamisole

b. Prednisolone

c. Thymus extract

d. Sodium nucleinate

e. \gamma globulin

1101. 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. Addiction

b. Summation

c. Potentiation

d. Tolerance

e. Cumulation

1102. 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. Metabolic alkalosis

b. No acid-base imbalance occurs

c. Respiratory alkalosis

d. Respiratory acidosis

e. Metabolic acidosis

1103. 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. Gluconeogenesis

d. Glycolysis

e. Glycogen phosphorylation

1104. 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. Crohn's disease

b. Menetrier's disease

c. Pseudomembranous colitis

d. Typhoid fever

e. Nonspecific ulcerative colitis

1105. 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. Interphase
- b. Telophase
- c. Prophase
- d. Anaphase

e. Metaphase

1106. 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. Chronic superficial gastritis
- b. Acute purulent gastritis
- c. Giant hypertrophic gastritis
- d. Acute catarrhal gastritis

e. Chronic atrophic gastritis

1107. After eating fatty foods, the patient develops nausea, heartburn, and steatorrhea. What is the likely cause of this condition?

- a. Disturbed trypsin synthesis
- b. Increased lipase production
- c. Amylase deficiency
- d. Disturbed phospholipase synthesis

e. Bile acid deficiency

1108. 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. Increased secretion of thyroid hormones
- b. Increased synthesis of adrenocorticotrophic hormone
- c. Massive release of catecholamines by the adrenal glands
- d. Release of noradrenaline by sympathetic nerves
- e. Activation of the vegetative nuclei of the hypothalamus

1109. 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. Leiomyosarcoma
- b. Lipoma
- c. Angiomyolipoma

d. Liposarcoma

e. -

1110. 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. Hydronephrosis

- b. Pyelectasis
- c. Hydroureteronephrosis
- d. Nephroblastoma
- e. Renal cyst

1111. An HIV-infected patient presents with suppressed activity of the immune system. The state of immunodeficiency in this patient is mainly caused by the damage to certain cells. Name these cells.

- a. Suppressor T-cells
- b. Macrophages
- c. Killer T-cells
- d. B-lymphocytes

**e. Helper T-cells**

1112. After administration of antitetanus serum the patient developed anaphylactic shock. What cells produce mediators in classic anaphylactic reaction?

**a. Mast cells**

- b. Eosinophils
- c. B lymphocytes
- d. T lymphocytes
- e. Neutrophils

1113. 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. Anaprilin (Propranolol)
- c. Apressin (Hydralazine)
- d. Octadine (Guanethidine)
- e. Dibazol (Bendazol)

1114. A patient with an infectious disease is sensitized to benzylpenicillin. What antibiotic will be the safest for this patient?

**a. Azithromycin**

- b. Amoxicillin
- c. Oxacillin
- d. Bicillin
- e. Ampicillin

1115. 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. Medulla oblongata
- b. Spinal cord

**c. Cerebellum**

- d. Pons
- e. Diencephalon

1116. 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. Trypsin
- b. Pepsin

**c. Lipase**

- d. Amylase
- e. Gastric acid

1117. 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. Pyruvic acid
- d. Tyrosine

**e. 5-Oxytryptophan**

1118. 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°C. What has likely caused the deterioration of the patient's condition?

**a. Effect of the pathogen's endotoxins**

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

1119. A 30-year-old man hospitalized with the diagnosis of acute glomerulonephritis has proteinuria.

What disorder has caused this phenomenon?

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

1120. A woman giving birth has an increased pain threshold due to activation of the following system:

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

1121. A patient presents with a pinpoint pupil that does not dilate, when the lighting changes. Where was the central nervous system damaged?

- a. Lateral horn of the spinal cord's gray matter at the level of C8-Th1
- b. Cerebral peduncles at the level of the superior colliculi in the midbrain tectum
- c. Superior colliculi in the midbrain tectum
- d. Lateral geniculate body in the diencephalon
- e. Pes pedunculi at the level of the inferior colliculi in the midbrain tectum

1122. The patient's blood test shows a significant increase in the lymphocyte count. What hormone facilitates this change?

- a. Neurotensin
- b. Motilin
- c. Thymosin
- d. Tyrosine
- e. Somatostatin

1123. 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. Clonidine
- b. Furosemide
- c. Metoprolol
- d. Enalapril
- e. Spironolactone

1124. 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. Cavernous hemangioma
- b. Adenocarcinoma
- c. Medullary cancer
- d. Destructive (malignant) hydatidiform mole

e. Chorioepithelioma

1125. 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. Increased leukocyte destruction
- c. Increased migration of granulocytes into tissues
- d. Disturbed release of mature leukocytes from the bone marrow
- e. Autoimmune process development

1126. 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. Purkinje fibers

- b. Sinoatrial node
- c. His' bundle branches
- d. Atrioventricular node**
- e. His' bundle

1127. 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. Stimulating
- b. Anaphylactic
- c. Delayed hypersensitivity
- d. Cytotoxic**
- e. Immune complex-mediated

1128. 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. Allopurinol**
- c. Prednisolone
- d. Theophylline
- e. Urolesan

1129. 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. Cannot be determined
- c. IV (AB)
- d. II (A)
- e. III (B)**

1130. 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. Repair
- c. Elongation
- d. Initiation**
- e. Transcription

1131. 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. Posterior hypothalamic nuclei**
- b. Supraoptic nuclei
- c. Lateral hypothalamic nuclei
- d. Medial hypothalamic nuclei
- e. Ventral hypothalamic nuclei

1132. 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. Increased pulmonary ventilation**
- b. -
- c. Decreased reabsorption of bicarbonate in the kidneys
- d. Decreased pulmonary ventilation
- e. Decreased ammonia excretion with urine

1133. A patient is allergic to pollen. How should the specific hyposensitization of the body be carried out?

- a. Repeated introduction of large doses of the allergen, with gradually reducing doses

**b. Repeated introduction of small doses of the allergen, with gradually increasing doses**

- c. Administration of corticosteroid drugs
- d. Administration of an antispasmodic drug
- e. Administration of an anesthetic

1134. 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. Obligate host
- b. Reservoir host**
- c. Definitive host
- d. Optional host
- e. Additional host

1135. 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. Viral
- b. Autoimmune**

- c. Bacterial
- d. Infectious-allergic
- e. Caused by physical factors

1136. 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. Transitional atypical cells
- b. His bundle cells
- c. Pacemaker cells

**d. Secretory cardiomyocytes**

- e. Ventricular cardiomyocytes

1137. 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. Antibacterial immunity
- c. Artificial passive immunity
- d. Artificial active immunity**

- e. Antitoxic immunity

1138. 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. Decreased proteosynthesis**
- b. Decreased lipolysis
- c. Accelerated gluconeogenesis
- d. Intensified catabolism
- e. Increased lipolysis