

MINISTRY OF PUBLIC HEALTH OF UKRAINE

Department of human resources policy, education and science

Testing Board

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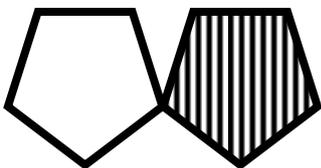
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Test items for licensing examination

Krok 1

MEDICINE



General Instruction

Every one of these numbered questions or unfinished statements in this chapter corresponds to answers or statements endings. Choose the answer (finished statements) that fits best and fill in the circle with the corresponding Latin letter on the answer sheet.

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The book includes test items for use at licensing integrated examination “Krok 1. Medicine” and further use in teaching.

The book has been developed for students of medical, pediatric and medical-and-prophylactic faculties and academic staff of higher medical educational establishments.

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1. A 40-year-old woman on examination presents with intensified basal metabolic rate. What hormone present in excess leads to such condition?

- A. Triiodothyronine
- B. Thyrocalcitonin
- C. Glucagon
- D. Aldosterone
- E. Somatostatin

2. Autopsy of a woman revealed the following morphologic changes: stenosis of the atrioventricular opening, mitral insufficiency. Histologically there are focal cardi-sclerosis and "blooming" Aschoff nodules in the myocardium. What is the most likely diagnosis?

- A. Rheumatism
- B. Scleroderma
- C. Dermatomyositis
- D. Polyarteritis nodosa
- E. Systemic lupus erythematosus

3. After a case of sepsis a 27-year-old woman developed "bronzed" skin discoloration characteristic of Addison's disease. Hyperpigmentation mechanism in this case is based on increased secretion of:

- A. Melanocyte-stimulating hormone
- B. Somatotropin
- C. Gonadotropin
- D. β -lipotropin
- E. Thyroid-stimulating hormone

4. A 16-year-old girl presents with no hair on the pubis and in the armpits, her mammary glands are underdeveloped, no menstruations. What hormone imbalance can it be indicative of?

- A. Ovarian failure
- B. Hyperthyroidism
- C. Hypothyroidism
- D. Pancreatic islet failure
- E. Adrenal medulla hyperfunction

5. 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 microorganism:

- A. Vibrio
- B. Spirochaete
- C. Clostridium
- D. Bacillus
- E. Spirilla

6. A patient was brought into the infecti-

onal diseases hospital on the 8th day since the disease onset. The patient complains of headache, malaise, and weakness. A sample of blood was taken for the serological test. Widal agglutination test results with blood sample diluted 1:200 and typhoid fever O-diagnosticum were positive. What diagnosis can be made based on the results of this test?

- A. Typhoid fever
- B. Dysentery
- C. Cholera
- D. Leptospirosis
- E. Tuberculosis

7. Protective function of saliva is based on several mechanisms, including the presence of enzyme that has bactericidal action and causes lysis of complex capsular polysaccharides of staphylococci and streptococci. Name this enzyme:

- A. Lysozyme
- B. α -amylase
- C. Oligo-1,6-glucosidase
- D. Collagenase
- E. β -glucuronidase

8. In the process of hemoglobin catabolism iron is released and then as a part of special transport protein is returned to the bone marrow, to be used again for hemoglobin synthesis. Name this transport protein:

- A. Transferrin
- B. Transcobalamin
- C. Haptoglobin
- D. Ceruloplasmin
- E. Albumin

9. The first-aid center has received a victim of a traffic accident diagnosed with closed displaced fracture of the middle third of the thigh. For repositioning of bone fragments the patient received 10 ml of 2% dithylinum solution intravenously, which resulted in prolonged period of apnoea and muscle relaxation. What enzyme is deficient, resulting in such pharmacogenetic enzymopathy?

- A. Pseudocholinesterase
- B. Uridine diphosphate glucuronyltransferase
- C. Glucose 6-phosphate dehydrogenase
- D. Methemoglobin reductase
- E. N-acetyltransferase

10. An 18-year-old student presents with enlarged thyroid gland accompanied by accelerated metabolism and increased heart rate. These signs can be observed during hypersecretion of thyroxin. What organelles of thyroid cells are primarily responsible for hormone production and secretion?

- A. Golgi apparatus
- B. Mitochondria
- C. Ribosomes
- D. Centrosomes
- E. Lysosomes

11. 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. Transverse colon
- B. Jejunum
- C. Duodenum
- D. Ileum
- E. Sigmoid colon

12. A laboratory experiment on a dog was used to study central parts of auditory system. One of the mesencephalon structures was destroyed. The dog has lost the orienting response to auditory signals. What structure was destroyed?

- A. Inferior colliculi of corpora quadrigemina
- B. Superior colliculi of corpora quadrigemina
- C. Substantia nigra
- D. Reticular formation nuclei
- E. Red nucleus

13. Histological investigation of the uterine scrape of the 45-year-old woman with disturbed ovarian menstrual cycle revealed increased number of endometrial glands, some of which are serrated, while others are dilated and cyst-like. Make the diagnosis:

- A. Endometrial cystic glandular hyperplasia
- B. Placental polyp
- C. Atypical endometrial hyperplasia
- D. Glandular endometrial polyp
- E. Endometrial adenocarcinoma

14. A 45-year-old man diagnosed with hepatic cirrhosis and ascites underwent drainage of 5 liters of fluid from his abdominal cavity, which resulted in development of syncopal state due to insufficient blood supply to the brain. What circulatory disorder occurred in the abdominal cavity in this case?

- A. Arterial hyperemia
- B. Ischemia
- C. Venous hyperemia
- D. Thrombosis
- E. Embolism

15. During cholecystectomy besides *a. cystyca* another artery was pulled into the ligature. Ligation of this artery resulted in right-sided necrosis of the liver which led to the death of the patient. What artery was mistakenly ligated along with *a. cystyca*?

- A. *Ramus dexter a. hepatica propria*
- B. *A. hepatica communis*
- C. *A. gastro-duodenalis*
- D. *Ramus sinister a. hepatica propria*
- E. *A. pancreato-duodenalis sup*

16. Microscopy of the puncture sample obtained from the inflammation focus of the patient with cutaneous abscess revealed numerous blood cells of different types. What cells are the first to transfer from vessels to tissues during inflammation?

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

17. During the first year of life an infant presents with disturbed process of breast milk curdling. What cells of the proper gastric glands are functionally disturbed?

- A. Main exocrinocytes
- B. Parietal exocrinocytes
- C. Cervical mucous cells
- D. Accessory mucous cells
- E. Exocrinocytes

18. 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 production in the muscles
- C. Increased creatinine reabsorption
- D. Increased glomerular filtration
- E. Increased creatinine production in the renal tubules

19. Collagenosis patients typically present with connective tissue destruction processes. The presence of these processes can be confirmed by the increase in:

- A. Blood oxyproline and oxylysine
- B. Blood creatine and creatinine
- C. LDH-isoenzyme activity in the blood
- D. Transaminase activity in the blood
- E. Blood urates

20. A 63-year-old man suffers from esophageal carcinoma, presents with metastases into the mediastinal lymph nodes and cancerous cachexia. What pathogenetic stage of neoplastic process is observed in the patient?

- A. Progression
- B. Promotion
- C. Transformation
- D. Initiation
- E. -

21. After an X-ray examination of the tuberculosis clinic patient, he was diagnosed with tumor of the right lung. During operation the surgeon removed the middle lobe of the patient's right lung. This lobe includes:

- A. *Segmentum laterale et segmentum mediale*
- B. *Segmentum basale anterius et posterius*
- C. *Segmentum anterius et segmentum apicale*
- D. *Segmentum lingualare superius et inferius*
- E. *Segmentum apicale (superius) et segmentum basale mediale*

22. A 2-year-old child presents with physical retardation and frequent pneumonias. The child was diagnosed with non-closure of the arterial canal. Hemodynamics disturbance in this case is caused by communication between the:

- A. Aorta and pulmonary trunk
- B. Pulmonary trunk and pulmonary veins
- C. Superior vena cava and aorta
- D. Superior vena cava and pulmonary trunk
- E. Aorta and pulmonary veins

23. A child diagnosed with purulent inflammation of the middle ear was brought to the otolaryngology department. The disease started with the inflammation of the nasopharynx. It was determined that the infection had reached the tympanic cavity through the eustachian tube that is located in the:

- A. *Canalis musculotubarius*
- B. *Canaliculus tympanicus*
- C. *Canalis caroticus*
- D. *Canaliculus chordae tympani*
- E. *Canaliculi carotico tympanici*

24. During the prestart period an athlete develops increased frequency and force of cardiac contractions. These changes are caused by intensification of the following reflex responses:

- A. Sympathetic conditioned
- B. Sympathetic unconditioned
- C. Parasympathetic conditioned
- D. Parasympathetic unconditioned
- E. Peripheral

25. Due to trauma the patient has lost 25% of circulating blood volume. Name the emergency compensatory mechanism against blood loss:

- A. Interstitial fluid inflow to the vessels
- B. Restoration of blood protein composition
- C. Increase of reticulocyte number
- D. Restoration of erythrocyte number
- E. Erythropoiesis activation

26. ECG analysis of the patient shows that the T waves are positive in the second standard limb lead and their amplitude and duration is normal. The conclusion can be made that the following process occurs normally in the patient's ventricles:

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

27. A patient demonstrates sharp decrease of pulmonary surfactant activity. This condition can result in:

- A. Alveolar tendency to recede
- B. Decreased airways resistance
- C. Decreased work of expiratory muscles
- D. Increased pulmonary ventilation
- E. Hyperoxemia

28. After a case of common cold the patient developed numbness of the right side of the face. Examination revealed disturbed pain and thermal sensitivity in the right half of the face. What nerve was damaged?

- A. Trigeminal
- B. Facial
- C. Glossopharyngeal
- D. Vagus
- E. Hypoglossal

29. X-ray examination of a 57-year-old man indicates local areas of hard bone tissue resorption in some of the patient's bones. These changes can be associated with increased activity of:

- A. Osteoclasts
- B. Chondroblasts
- C. Osteocytes
- D. Osteoblasts
- E. Chondrocytes

30. A patient presents with acute attack of cholelithiasis. Laboratory examination of the patient's feces will show the following in this case:

- A. Negative reaction to stercobilin
- B. Positive reaction to stercobilin
- C. Connective tissue
- D. Partially digested cellulose
- E. Starch granules

31. During autopsy of a 34-year-old man, who died of chronic kidney failure due

to renal amyloidosis, in the lungs (mainly in the lower lobes) the pathologist detected multiple bronchial dilations filled with purulent masses accumulated in the bronchial lumen. Surface of the lungs section has fine-meshed pattern and resembles a honeycomb. Histologically there is a chronic inflammation detected in the bronchial wall, muscle fibers are replaced with connective tissue. These changes in the lungs can be defined as:

- A. Bronchiectases
- B. Bronchopneumonia
- C. Chronic bronchitis
- D. Chronic pneumonia
- E. Lung abscesses

32. Initial inoculation of water in 1% peptone water resulted in growth of a thin film on the medium surface in 6 hours. Such cultural properties are characteristic of causative agent of the following disease:

- A. Cholera
- B. Plague
- C. Tuberculosis
- D. Dysentery
- E. Pseudotuberculosis

33. A 30-year-old man complains of suffocation, heaviness in the chest on the right, general weakness. Body temperature is 38.9°C . Objectively the right side of the chest lags behind the left side during respiration. Pleurocentesis yielded exudate. What is the leading factor of exudation in the patient?

- A. Increased permeability of the vessel wall
- B. Increased blood pressure
- C. Hypoproteinemia
- D. Erythrocyte aggregation
- E. Decreased resorption of pleural fluid

34. A 42-year-old man with gout presents with high content of uric acid in blood. The patient was prescribed allopurinol to lower the concentration of uric acid. Allopurinol is a competitive inhibitor of the following enzyme:

- A. Xanthine oxidase
- B. Adenosine deaminase
- C. Adenine phosphoribosyltransferase
- D. Hypoxanthine phosphoribosyltransferase
- E. Guanine deaminase

35. Autopsy 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. Hemorrhagic infarction
- B. Carneous degeneration
- C. Gangrene
- D. Hemorrhage
- E. Atelectasis

36. A patient complains of dizziness, thirst, difficult swallowing, and impaired vision of close objects. Objectively: respiratory rate is increased, pupils are dilated, general agitation, talkativeness, though the speech is indistinct. BP is 110/70 mm Hg, heart rate is 110/min. Given symptoms can indicate overdose of the following drug:

- A. Atropine
- B. Morphine
- C. Ephedrine
- D. Aminazine
- E. Caffeine

37. A patient presents with indigestion, stomachaches, and excessive salivation. Similar symptoms had already been observed in this patient previously. Laboratory analysis detected oval eggs covered with lumpy capsules in the patient's feces. What is the most likely cause of the patient's disorder?

- A. Ascariasis
- B. Trichocephaliasis
- C. Diphyllbothriasis
- D. Enterobiasis
- E. Fascioliasis

38. Regional lymph nodes surrounding an infected wound are enlarged. Histological examination shows increased number of macrophages, lymphocytes, and lymphatic follicles, as well as a large amount of plasma cells, in the cortical layer of the lymph nodes. What process in the lymph nodes is indicated by these histologic changes?

- A. Antigen stimulation
- B. Acquired deficiency of lymphoid tissue
- C. Congenital deficiency of lymphoid tissue
- D. Neoplastic aberration
- E. Transplant rejection

39. During removal of the hyperplastic thyroid gland of a 47-year-old woman, the parathyroid gland was damaged. One month after the surgery the patient developed signs of hypoparathyroidism: frequent convulsions, hyperreflexia, laryngospasm. What is the most likely cause of the patient's condition?

- A. Hypocalcemia
- B. Hyponatremia
- C. Hyperchlorhydria
- D. Hypophosphatemia
- E. Hyperkalemia

40. On examination the patient presents with hirsutism, moon-shaped face, stretch marks on the abdomen. BP is 190/100 mm Hg, blood glucose is 17.6 mmol/L. What pathology is such clinical presentation characteristic of?

- A.** Adrenocortical hyperfunction
- B.** Hyperthyroidism
- C.** Hypothyroidism
- D.** Gonadal hypofunction
- E.** Hyperfunction of the insular apparatus

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

- A.** Axillary, parasternal
- B.** Abdominal, cervical
- C.** Cervical, parasternal
- D.** Parasternal, mediastinal
- E.** Aortic, mediastinal

42. A 40-year-old pregnant woman underwent amniocentesis. Examination determined the fetal karyotype to be 47, XY+21. What fetal pathology was detected?

- A.** Down syndrome
- B.** Klinefelter syndrome
- C.** Turner syndrome
- D.** Phenylketonuria
- E.** Patau syndrome

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

- A.** Tachyphylaxis
- B.** Idiosyncrasy
- C.** Teratogenicity
- D.** Allergy
- E.** Cumulation

44. In a township there was registered an outbreak of hepatitis, which had supposedly spread through the water supply. What hepatitis virus could be the cause of the outbreak in this township?

- A.** Hepatitis E virus
- B.** Hepatitis C virus
- C.** Hepatitis D virus
- D.** Hepatitis G virus
- E.** Hepatitis B virus

45. A medical student was hospitalized into the infectious diseases unit on the 2nd day after the disease onset; the patient is suspected to have infectious mononucleosis. What results of laboratory analysis can confirm this diagnosis immediately on the day of the hospitalization?

- A.** IgM antibodies to Epstein-Barr virus were detected
- B.** IgM antibodies to herpes simplex virus were detected
- C.** Fourfold increase in number of antibodies to Epstein-Barr virus was detected
- D.** Herpesvirus was isolated
- E.** Cytomegalovirus antibodies were detected

46. A 64-year-old woman presents with disturbed fine motor function of her fingers, marked muscle rigidity, and tremor. The neurologist diagnosed her with Parkinson's disease. What brain structures are damaged resulting in this disease?

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

47. A 20-year-old young man with tall stature, asthenic body type, signs of hypogonadism and gynecomastia, and low sperm count (azoospermia) has karyotype 47, XXY. What hereditary syndrome can be characterized by this chromosomal anomaly?

- A.** Klinefelter syndrome
- B.** Wiskott-Aldrich syndrome
- C.** Turner syndrome
- D.** Louis-Bar syndrome (ataxia-telangiectasia)
- E.** Down syndrome

48. Pathogenic staphylococcus was obtained from the purulent wound of the patient. Its antibiotic sensitivity was determined to be as follows: penicillin growth inhibition zone - 8 mm; oxacillin - 9 mm, ampicillin - 10 mm, gentamicin - 22 mm, lincomycin - 11 mm. What antibiotic should be chosen for treatment in this case?

- A.** Gentamicin
- B.** Oxacillin
- C.** Ampicillin
- D.** Penicillin
- E.** Lincomycin

49. A patient presents with dilated blood vessels of the anterior medial surface of the lower leg. This condition resulted from the dilation of the following blood vessel:

- A.** *V. saphena magna*
- B.** *A. tibialis anterior*
- C.** *V. saphena parva*
- D.** *A. tibialis posterior*
- E.** *V. poplitea*

50. A patient, who had received a thermal

burn, developed painful boils filled with turbid liquid on the skin. What morphological type of inflammation has developed in the patient?

- A. Serous
- B. Proliferative
- C. Croupous
- D. Granulomatous
- E. Diphtheritic

51. Nitrogen is being excreted from the body mainly as urea. When activity of a certain enzyme in the liver is low, it results in inhibition of urea synthesis and nitrogen accumulation in blood and tissues. Name this enzyme:

- A. Carbamoyl phosphate synthetase
- B. Aspartate aminotransferase
- C. Urease
- D. Amylase
- E. Pepsin

52. Coronary artery thrombosis resulted in development of myocardial infarction. What mechanisms of cell damage are leading in this disease?

- A. Calcium
- B. Lipid
- C. Acidotic
- D. Electroosmotic
- E. Protein

53. People, who for a long time remained in hypodynamic state, develop intense pain in the muscles after a physical exertion. What is the most likely cause of this pain?

- A. Accumulation of lactic acid in muscles
- B. Intensive breakdown of muscle proteins
- C. Accumulation of creatinine in muscles
- D. Decreased content of lipids in muscles
- E. Increased content of ADP in muscles

54. Histological specimen shows organ parenchyma to consist 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. Spleen
- B. Tonsil
- C. Lymph node
- D. Thymus
- E. Red bone marrow

55. A 25-year-old woman complains of visual impairment. Examination revealed disturbed eye accommodation, the pupil is dilated and unresponsive to light. What muscles are functionally disturbed in this case?

- A. Iris sphincter muscle, ciliary muscle
- B. Iris dilator muscle, ciliary muscle
- C. Superior oblique muscle, ciliary muscle
- D. Lateral rectus muscle, iris sphincter muscle
- E. Iris sphincter and iris dilator muscles

56. A patient with hypochromic anemia has hair with split ends and suffers from hair loss. The nails are brittle. Gustatory sensations are affected. What is the mechanism of development of these symptoms?

- A. Iron enzymes deficiency
- B. Vitamin B_{12} deficiency
- C. Low production of parathyroid hormone
- D. Vitamin A deficiency
- E. Low production of thyroid hormones

57. A patient suffers from hepatic cirrhosis. What substance excreted in urine should be analyzed to characterize the antitoxic function of liver?

- A. Hippuric acid
- B. Ammonium salts
- C. Creatinine
- D. Uric acid
- E. Amino acids

58. 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. Thromboembolism
- B. Thrombosis
- C. Tissue embolism
- D. Foreign body embolism
- E. Fat embolism

59. Blood of the patients with diabetes mellitus shows increased content of free fatty acids. Name the most likely cause of this:

- A. Increased activity of adipose triglyceride lipase
- B. Accumulation of palmitoyl-CoA in cytosol
- C. Activation of ketone bodies utilization
- D. Activation of apoA1, apoA2, and apoA4 apolipoprotein synthesis
- E. Decreased activity of plasma phosphatidylcholine-cholesterol-acyltransferase

60. Representatives of a certain human population can be characterized by elongated body, height variability, decreased volume of muscle mass, increased length

of limbs, decreased size and volume of rib cage, increased perspiration, decreased indices of base metabolism and fat synthesis. What type of adaptive evolution is it?

- A. Tropical
- B. Arctic
- C. Moderate
- D. Intermediate
- E. Mountain

61. A 56-year-old man complains of thirst and frequent urination. The endocrinologist diagnosed this patient with diabetes mellitus and prescribed him glibenclamide. What mechanism of action does this drug have?

- A. Stimulation of β -cells of islets of Langerhans
- B. Facilitates glucose uptake by the tissues
- C. Facilitates glucose transport through cell membranes
- D. Suppression of α -cells of islets of Langerhans
- E. Inhibits glucose absorption in the intestine

62. Patients with bile duct obstruction typically present with inhibited blood clotting and develop hemorrhages due to insufficient assimilation of vitamin:

- A. K
- B. A
- C. D
- D. E
- E. C

63. 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 dilation
- D. Arterial and venous dilation
- E. Venous dilation

64. Examination of the coronary arteries revealed atherosclerotic plaques with calcinosis that narrow the arterial opening by 1/3. In the muscle there are numerous whitish layers of connective tissue. Name the process detected in the myocardium:

- A. Diffuse cardiosclerosis
- B. Tiger heart
- C. Postinfarction cardiosclerosis
- D. Myocarditis
- E. Myocardial infarction

65. A person has increased pulmonary ventilation due to physical exertion. What indicator of external respiration will be significantly increased compared to the resti-

ng state?

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

66. The carotid bodies on both sides were removed in a test animal. Which of the listed factors **WILL NOT** be able to cause hyperventilation in the test animal?

- A. Hypoxemia
- B. Physical exertion
- C. Hypercapnia
- D. Acidosis
- E. Increase of core body temperature

67. Due to prolonged stay in the mountains at the altitude of 3000 m above the sea level, a person developed increased oxygen capacity of blood, which was directly caused by intensified production of:

- A. Erythropoietins
- B. Leukopoietins
- C. Carbaminohemoglobin
- D. Catecholamines
- E. 2,3-bisphosphoglycerate

68. A woman has been limiting the amount of products in her diet to lose some weight. 3 months later she developed edemas and her diuresis increased. What dietary component deficiency is the cause of this?

- A. Proteins
- B. Fats
- C. Carbohydrates
- D. Vitamins
- E. Minerals

69. A microslide of the lung tissue sample taken from a patient with pneumonia shows damage to the cells that carry out respiratory function. What cells of the alveolar wall are damaged?

- A. Type 2 alveolar cells
- B. Type 1 alveolar cells
- C. Macrophages
- D. Club cells
- E. Lymphocytes

70. After a psychic trauma a woman developed periodical increases in her blood pressure accompanied by headache, palpitations, and general weakness. What mechanism of hypertension development does this woman have?

- A. Increased arteriolar tone
- B. Increased circulating blood volume
- C. Decreased cardiac output
- D. Tachycardia
- E. Venoconstriction

71. An electron micrograph of a nephron segment shows cuboidal cells with ciliated lining on their apical surfaces; their basal surfaces have basal striation with mitochondria located between the cytolemma invaginations. Name the described nephron segment:

- A. Proximal tubule
- B. Collecting ducts
- C. Distal tubule
- D. Thin limbs of Henle's loop
- E. Glomerular capsule

72. A patient has been taking bisacodyl for a long time to treat chronic constipation. However, several weeks later the aperient effect of the drug diminished. What is the possible cause of this?

- A. Acquired tolerance
- B. Drug dependence
- C. Material cumulation
- D. Functional cumulation
- E. Sensitization

73. A force generated by the muscle is not enough to lift a load. What type of muscle contraction occurs in this case?

- A. Isometric
- B. Tetanic
- C. Isotonic
- D. Eccentric
- E. Concentric

74. Condition of a patient with diabetes mellitus sharply deteriorated after a regular injection of insulin. The patient became anxious and broke out in cold sweat; tremor of the extremities, general weakness, and dizziness appeared. What medicine can remove these symptoms?

- A. Adrenaline
- B. Tolbutamide
- C. Caffeine
- D. Noradrenaline
- E. Glibutid (Buformin)

75. Microscopy of the myocardium of a girl, who died of diphtheria due to heart failure, shows fatty degeneration, multiple foci of cardiomyocytes necrosis, and small foci of cellular infiltrates in the interstitium. What type of myocarditis is it?

- A. Alterative
- B. Diffuse exudative
- C. Focal exudative
- D. Interstitial
- E. Granulomatous

76. A schizophrenia patient was prescribed aminazine. What pharmacodynamic action of this drug is the grounds for its prescription in this case?

- A. Antipsychotic
- B. Antiemetic
- C. Hypothermic
- D. Muscle relaxant
- E. Hypotensive

77. A 40-year-old man developed skin redness and swelling in the neck area, where eventually a small abscess appeared. On section the focus is dense and yellow-green colored. In the purulent masses there are white granules. Histologically there are fungal druses, plasma and xanthome cells, and macrophages detected. Specify the most correct etiological name of this pathological process:

- A. Actinomycosis
- B. Furuncle
- C. Carbuncle
- D. Syphilis
- E. Leprosy

78. A patient was hospitalized into the infectious diseases unit on the 11th day since the disease onset and provisionally diagnosed with typhoid fever. What biological material should be collected from the patient for the analyzes at this stage?

- A. Blood serum
- B. Urine
- C. Feces
- D. Bile
- E. Roseola secretion

79. A man with ischemic heart disease has been taking his medicine too often throughout a day, which resulted in poisoning. Examination detects cyanosis of skin and mucosa, sharp drop of blood pressure, tachycardia, and respiratory depression. Blood methemoglobin is high. What type of medicine did the patient overdose on?

- A. Organic nitrates
- B. α -adrenergic blockers
- C. Calcium channel blockers
- D. Adenosine-based drugs
- E. Myotropic antispasmodics

80. General structure of eukaryotic genes is as follows: exon-intron-exon. Such functional structure of a gene leads to certain specifics of the transcription process. What

sequence will correspond with precursor mRNA (immature)?

- A. Exon-intron-exon
- B. Exon-exon-intron
- C. Exon-exon
- D. Intron-exon
- E. Exon-intron

81. Atria of a test animal were superdistended with blood, which resulted in decreased reabsorption of Na^+ and water in renal tubules. This can be explained by the effect of the following factor on the kidneys:

- A. Natriuretic hormone
- B. Aldosterone
- C. Renin
- D. Angiotensin
- E. Vasopressin

82. A patient with clinical signs of a primary immunodeficiency has functionally disturbed mechanism of antigen-presentation to the immunocompetent cells. What cells are likely to have structural defects?

- A. Macrophages, monocytes
- B. T-lymphocyte
- C. B-lymphocyte
- D. Fibroblasts
- E. O-lymphocytes

83. During intensive muscle work there is a large amount of ammonia produced in the muscles. What amino acid plays the main role in the transportation of ammonia to the liver and participates in gluconeogenesis reactions?

- A. Alanine
- B. Arginine
- C. Lysine
- D. Ornithine
- E. Aspartate

84. Encephalopathy has developed in a child with hemolytic disease of the newborn. What substance had increased in the child's blood, resulting in damage to the CNS?

- A. Unconjugated bilirubin
- B. Bilirubin-albumin complex
- C. Bilirubin glucuronide
- D. Verdohemoglobin
- E. Bile acids

85. Renal examination shows the kidney to be swollen and plethoric, with easily removable capsule. Renal pelvis and calyces are dilated and filled with turbid urine; their mucosa is dull and has hemorrhagic foci. On section the renal tissue is variegated, there are yellow-gray areas surrounded with plethoric and hemorrhagic zone. What di-

sease can be characterized by such results of macroscopic examination?

- A. Acute pyelonephritis
- B. Acute glomerulonephritis
- C. Renal amyloidosis
- D. Nephrolithiasis
- E. Polycystic kidney

86. A 54-year-old man complains of general weakness, frequent colds, and bruises constantly appearing on his body. Blood test: erythrocytes - $2.5 \cdot 10^{12}/L$; Hb- 80 g/L; color index - 0.9; reticulocytes - absent; platelets - $50 \cdot 10^9/L$; leukocytes - $58 \cdot 10^9/L$; leukogram: basocytes - 5%, eosinophils - 15%, myeloblasts - 6%, myelocytes - 10%, juvenile - 18%, stab neutrophils - 26%, segmented neutrophils - 10%, lymphocytes - 8%, monocytes - 2%, ESR - 40 mm/hour. What hematologic conclusion can be made?

- A. Chronic myelogenous leukemia
- B. Leukemoid response
- C. Myeloblastic leukemia
- D. Chronic lymphocytic leukemia
- E. Basophilic eosinophilic leukocytosis

87. A mutation has occurred in a cell in the first exon of the structural gene. The number of nucleotide pairs changed from 290 to 250. Name this type of mutation:

- A. Deletion
- B. Inversion
- C. Duplication
- D. Translocation
- E. Nullisomy

88. The dorsal root of the spinal nerve of a test animal was severed. What changes will occur in the innervation area?

- A. Loss of sensitivity
- B. Loss of motor function
- C. Decreased muscle tone
- D. Increased muscle tone
- E. Loss of sensitivity and motor function

89. Due to destruction of certain structures of the brainstem a test animal has lost its orientation reflexes in response to strong light stimuli. What structures were destroyed?

- A. Anterior quadrigeminal bodies
- B. Posterior quadrigeminal bodies
- C. Red nuclei
- D. Vestibular nuclei
- E. Substantia nigra

90. A toxin neutralized with 0.4% formaldehyde under $37-40^\circ C$ for 4 weeks is used for vaccination. This preparation was first used by Gaston Ramon for diphtheria prevention. Name this preparation:

- A. Anatoxin
- B. Immunoglobulin
- C. Antitoxic serum
- D. Adjuvant
- E. Inactivated vaccine

91. 24 hours after an appendectomy the patient's blood test shows neutrophilic leukocytosis with a regenerative shift. What is the most likely mechanism of absolute leukocytosis development in the patient's peripheral blood?

- A. Intensification of leukopoiesis
- B. Leukocyte redistribution
- C. Decreased leukocyte disintegration
- D. Deceleration of leukocyte migration to the tissues
- E. Immunity activation

92. The right leg of a 40-year-old woman measured at the shin level is by 2 cm smaller in the diameter than the left leg. Ankle-jerk (Achilles) and knee-jerk reflexes are absent on the right. What is the most likely mechanism of hyporeflexia development during peripheral paralysis?

- A. Disturbed conduction of stimulation
- B. Inhibition of pyramidal motoneuron
- C. Disturbed synaptic impulse transmission
- D. Activation of excitatory impulses from the CNS
- E. Disturbed perception of stimulation

93. A 38-year-old man, who has been suffering from systemic lupus erythematosus for 3 years, developed diffuse renal lesions accompanied by massive edemas, marked proteinuria, hyperlipidemia, and dysproteinemia. What is the most likely mechanism of proteinuria development in this case?

- A. Autoimmune damage to the nephrons
- B. Inflammatory damage to the nephrons
- C. Ischemic damage to the tubules
- D. Increased blood proteins
- E. Morbid affection of the urinary tracts

94. A 59-year-old man, a business manager, developed intense burning retrosternal pain that irradiates to the left arm. The pain occurred in the evening after the tax audit. 15 minutes later the patient's condition normalized. What mechanism of angina pectoris development is leading in this patient?

- A. Increased level of blood catecholamines
- B. Coronary atherosclerosis
- C. Intravascular aggregation of blood cells
- D. Coronary artery thrombosis
- E. Functional cardiac overload

95. A 25-year-old woman at her third

pregnancy with impending miscarriage was brought to the hospital. What combination of Rh-factor of the mother and the fetus can be the cause of this condition?

- A. Mother Rh (-), fetus Rh (+)
- B. Mother Rh (-), fetus Rh (-)
- C. Mother Rh (+), fetus Rh (-)
- D. Mother Rh (+), fetus Rh (+)
- E. -

96. A specimen of a 10-day-old human embryo shows two interconnected sacs (amniotic and yolk sacs). Name the structure located in the place where these two sacs connect:

- A. Embryonic shield
- B. Floor of the amniotic sac
- C. Roof of the amniotic sac
- D. Amniotic stalk
- E. Extraembryonic mesoderm

97. A woman with the III (B), Rh (-) blood group gave birth to a child with the II (A) blood group. The child is diagnosed with hemolytic disease of newborn caused by rhesus incompatibility. What blood group and Rh does the father have?

- A. II (A), Rh (+)
- B. I (0), Rh (+)
- C. III (B), Rh (+)
- D. I (0), Rh (-)
- E. II (A), Rh (-)

98. A 40-year-old woman suffers from Cushing's disease - steroid diabetes. On biochemical examination she has hyperglycemia and hypochloremia. What process activates in the first place in such patients?

- A. Gluconeogenesis
- B. Glycogenolysis
- C. Glucose reabsorption
- D. Glucose transport to the cells
- E. Glycolysis

99. A patient with a chemical burn has developed esophageal stenosis. The patient presents with acute weight loss due to problematic food intake. Blood test: erythrocytes - $3.0 \cdot 10^{12}/L$, Hb- 106 g/L, total protein - 57 g/L. What type of starvation does this patient suffer from?

- A. Incomplete starvation
- B. Protein starvation
- C. Complete starvation
- D. Water starvation
- E. Absolute starvation

100. Autopsy of the body of a man, who for a long time had been working at the

factory with high content of silicon dioxide in the air, revealed enlarged dense lungs with numerous round and oval sclerotic foci. The foci were miliary and larger in size and colored gray or gray-black. What is the most likely diagnosis?

- A. Nodular silicosis
- B. Diffuse sclerotic silicosis
- C. Anthracosilicosis
- D. Silicoanthracosis
- E. Asbestosis

101. Autopsy of the body of a 50-year-old man, who had been suffering from tuberculosis and died of cardiopulmonary decompensation, shows lobar affection of the lungs: the upper lobe of the right lung is enlarged, dense, yellow on section, crumbling, with pleural fibrin deposition. What type of secondary tuberculosis can be characterized by this pathology?

- A. Caseous pneumonia
- B. Fibrous focal tuberculosis
- C. Infiltrative tuberculosis
- D. Tuberculoma
- E. Acute focal tuberculosis

102. A woman has come to the hospital with complaints of general weakness, dizziness, and dyspnea. Recently she has been taking levomycetin (chloramphenicol) for prevention of enteric infection. Blood test: erythrocytes - $1.9 \cdot 10^{12}/L$, hemoglobin - 58 g/L, color index - 0.9, leukocytes - 2.2 G/L, reticulocytes - 0.3%. What type of anemia is it indicative of?

- A. Hypoplastic
- B. Metaplastic
- C. Aplastic
- D. Hemolytic
- E. Iron-deficiency

103. Preoperative examination revealed prothrombin deficiency in the blood of the patient. What drug should be preliminarily prescribed to mitigate blood loss in the patient during the surgery?

- A. Vicasol (Menadione)
- B. Thrombin
- C. Aminocaproic acid
- D. Phenilin (Phenindione)
- E. Contrykal (Aprotinin)

104. A patient with streptococcal infection of the gingiva was prescribed a drug with β -lactam ring in its structure. What drug of those listed below belongs to this pharmacological group?

- A. Benzylpenicillin
- B. Rifampicin
- C. Erythromycin
- D. Streptomycin sulfate
- E. Levomycetin (Chloramphenicol)

105. A microslide of the skin sample taken from the finger of a child shows that epidermis is insufficiently developed. What germ layer was damaged in the process of embryo development?

- A. Ectoderm
- B. Mesoderm
- C. Endoderm
- D. Mesenchyme
- E. Ectomesenchyme

106. Neutralization of xenobiotics and active endogenous metabolites often occurs via introduction of an oxygen atom into the substrate molecule. What process occurs as the result?

- A. Hydroxylation
- B. Decarboxylation
- C. Transamination
- D. Phosphorilation
- E. Deaminization

107. In the process of an experiment, vascular resistance to the blood flow was measured in the different areas of circulatory system. The highest resistance was detected in the:

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

108. A 34-year-old man died in a comatose state. According to his family after a business trip to an African country he developed periodical jaundice attacks. Autopsy shows the following: dense enlarged spleen with slate-black pulp; enlarged plethoric liver, gray-black on section; cerebral gray matter is brown-gray; cerebral white matter contains numerous small hemorrhages. What infectious disease can be suspected?

- A. Malaria
- B. Meningococemia
- C. Prion infection
- D. Generalized herpetic infection
- E. Generalized cryptococcosis

109. What diagnostic method should be used in industry to test the raw leather for presence of *B. antracis*?

- A. Ascoli's thermo precipitation test
- B. Microscopy with Burry-Gins stain
- C. Microscopy with Aujeszky stain
- D. Bacteriological analysis
- E. Serological test

110. A 46-year-old patient suffering from ulcer disease of the stomach is diagnosed with rheumatoid arthritis. What anti-inflammatory drug would be the most advisable in this case?

- A. Celecoxib
- B. Prednisolone
- C. Analgin (Metamizole)
- D. Promedol (Trimeperidine)
- E. Paracetamol

111. A patient with myocardial infarction has acute heart failure. Among the drugs that increase the force of heart contractions the least dangerous in this case will be:

- A. Dobutamine
- B. Adrenaline
- C. Isadrinum (Isoprenaline)
- D. Euphyllin (Aminophylline)
- E. Caffeine

112. During intensive physical exertion, one of the energy sources for the working muscles is glucose produced as the result of gluconeogenesis. This process is the most intensive in the following organ:

- A. Liver
- B. Brain
- C. Lungs
- D. Muscles
- E. Stomach

113. During influenza epidemic, morbidity in the schoolchildren, who did not participate in sports, was 40%, while in the schoolchildren, who engaged in regular physical activities, morbidity did not exceed 20%. What adaptation mechanism ensured low morbidity in the physically active schoolchildren?

- A. Cross-adaptation
- B. Specific adaptation
- C. Physiological adaptation
- D. Biochemical adaptation
- E. Genetic adaptation

114. Monoamine oxidase inhibitors are widely used as psychopharmacological drugs. They change the level of nearly all neurotransmitters in synapses, with the following neurotransmitter being the exception:

- A. Acetylcholine
- B. Noradrenaline
- C. Adrenaline
- D. Dopamine
- E. Serotonin

115. A 17-year-old girl suffers from periodical palpitations that last several minutes. Her heart rate is 200/min., rhythmic. What heart rhythm disorder developed in this patient?

- A. Paroxysmal tachycardia
- B. Sinus tachycardia
- C. Sinus bradycardia
- D. Extrasystole
- E. Atrioventricular block

116. Kidney X-ray image obtained by means of pyelography shows that the minor calyces converge to form 2 major calyces that adjoin to the renal pelvis, from which the ureter exits. What type of urinary tract is it?

- A. Mature
- B. Embryonic
- C. Bicornuate
- D. Cystic
- E. Fetal

117. A patient has been brought into a surgical ward with an incised wound of the anterior surface of the shoulder in its lower one-third. Flexing function was disturbed in the shoulder and elbow joints, which is caused by the damage to the:

- A. Biceps muscle of the arm
- B. Triceps muscle of the arm
- C. Anconeus muscle
- D. Deltoid muscle
- E. Coracobrachial muscle

118. A patient suffers from acute cardiopulmonary failure with pulmonary edema. What diuretic should be prescribed in the given case?

- A. Furosemide
- B. Triamterene
- C. Spironolactone
- D. Hydrochlorothiazide (Dichlothiazidum)
- E. Acetazolamide (Diacarb)

119. Ketosis develops in the patients with diabetes mellitus, as the result of activation of fatty acids oxidation processes. What acid-base imbalance can result from accumulation of excessive ketone bodies in the blood?

- A. Metabolic acidosis
- B. Metabolic alkalosis
- C. No imbalance occurs
- D. Respiratory acidosis
- E. Respiratory alkalosis

120. A 5-year-old child is diagnosed with Bruton syndrome (X-linked agammaglobulinemia) that manifests itself as severe clinical course of bacterial infections and absence of B lymphocytes and plasma cells. What changes of immunoglobulin content can be observed in blood serum of the child with immunodeficiency?

- A. Decreased IgA, IgM
- B. Increased IgA, IgM
- C. Decreased IgD, IgE
- D. Increased IgD, IgE
- E. No changes

121. During the skill-building session in microbiology the students need to stain the prepared and fixed sputum smears obtained from a tuberculosis patient. What staining technique should be used in this case?

- A. Ziehl-Neelsen
- B. Burry
- C. Giemsa
- D. Gins
- E. Gram

122. A woman with hypophyseal diabetes insipidus developed a water-mineral imbalance. What type of water-mineral imbalance develops in such cases?

- A. Hyperosmolar dehydration
- B. Hypoosmolar dehydration
- C. Isoosmolar dehydration
- D. Hypoosmolar hyperhydration
- E. Hyperosmolar hyperhydration

123. First-year schoolchildren have received tuberculin skin test (Mantoux test) at the school nurse's office. The purpose of this test was:

- A. To determine the children that need to receive BCG vaccination
- B. To preventively vaccinate against tuberculosis
- C. To measure immunity stress toward diphtheria
- D. To measure allergization rate toward rickettsia
- E. To detect parotitis in the schoolchildren

124. In an experiment it is necessary to assess neuromotor and muscle excitability. What value should be measured to make the assessment?

- A. Sensory threshold
- B. Action potential amplitude
- C. Resting potential
- D. Threshold potential
- E. Action potential duration

125. Vestibular receptors of semicircular

canals of a test animal have been destroyed. What reflexes will disappear as a result?

- A. Statokinetic reflex during movements with angular acceleration
- B. Statokinetic reflex during movements with linear acceleration
- C. Head-righting reflex
- D. Body-righting reflex
- E. Primary orienting reflex

126. Acute renal impairment caused death of a patient with hemorrhage. Autopsy revealed enlarged kidneys with broad pale pink cortical layer expressively demarcated from dark red renal pyramids. Macroscopic examination revealed lack of epithelial nuclei of the convoluted tubules, tubulorrhexis, phlebostasis. The cell nuclei of the choroid glomus and straight tubules were present. What pathology is it?

- A. Necronephrosis
- B. Infarction
- C. Glomerulonephritis
- D. Pyelonephritis
- E. Nephrosis

127. A boxer had sustained a blow to the left parotid area, after which he developed paralysis of the facial muscles on this side. What nerve had been damaged?

- A. Facial
- B. Ophthalmic
- C. Maxillary
- D. Mandibular
- E. Lesser petrosal

128. A patient has an open facial wound with undermined edges; tissue necrosis with gradually developing partial gangrene that nearly reaches the bone tissue is observed. On close examination the wound contains live larvae. The patient is diagnosed with tissue myiasis. What *Diptera* larvae are the causative agents of this disease?

- A. *Wohlfahrtia magnifica*
- B. *Glossina palpalis*
- C. *Musca domestica*
- D. *Phlebotomus pappatachi*
- E. *Stomoxys calcitrans*

129. A hereditary disease - homocystinuria - is caused by disturbed transformation of homocysteine into methionine. Accumulated homocysteine forms its dimer (homocystine) that can be found in urine. What vitamin preparation can decrease homocysteine production?

- A. Vitamin B_{12}
- B. Vitamin C
- C. Vitamin B_1
- D. Vitamin B_2
- E. Vitamin PP

130. During hypersensitivity skin test a patient received an allergen subcutaneously, after which the patient developed skin redness, edema, and pain due to histamine action. This biogenic amine is produced as the result of the following transformation of histidine amino acid:

- A. Decarboxylation
- B. Methylation
- C. Phosphorylation
- D. Isomerization
- E. Deamination

131. During the fight a man has received a strong blow to the upper anterior abdominal wall, which resulted in the cardiac arrest. What mechanism has led to the cardiac arrest in this case?

- A. Parasympathetic unconditioned
- B. Sympathetic unconditioned
- C. Parasympathetic conditioned
- D. Sympathetic conditioned
- E. Peripheral

132. A woman has lost a lot of blood during the childbirth. Her blood group needs to be determined. Erythrocyte agglutination occurred with standard serums 0 (I) and A (II) and did not occur with standard serum B (III). What blood group does this woman have?

- A. B (III)
- B. 0 (I)
- C. A (II)
- D. AB (IV)
- E. -

133. A 60-year-old man diagnosed with chronic heart failure was brought to the hospital. After a long course of treatment the patient developed signs of intoxication: dyspnea, extrasystole, nausea, and disturbed perception of colors. What medicine has caused such side-effects?

- A. Digoxin
- B. Anaprilin (Propranolol)
- C. Nitroglycerine
- D. Drotaverine
- E. Furosemide

134. A patient with exacerbated peptic ulcer disease of the stomach has made an appointment with the doctor. What type of drugs should be included in the complex therapy of this patient?

- A. H₂ antagonists
- B. H₁ antagonists
- C. α -adrenergic antagonists
- D. β -adrenergic antagonists
- E. α -adrenergic agonists

135. Autopsy of the body revealed waxy degeneration of the rectus abdominis muscles. In the terminal segment of the small intestine there are ulcers 3-5 cm in diameter. The ulcer walls are covered in a crumbling grayish-white substance. The ulcer edges are markedly raised above the mucosa. Widal test is positive. Make the diagnosis:

- A. Typhoid fever
- B. Nonspecific ulcerative colitis
- C. Relapsing fever
- D. Crohn's disease
- E. Dysentery

136. Genealogical analysis of a child with myotonic dystrophy determined that this disease is present in every generation, equally presented by 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 dominant
- D. X-linked recessive
- E. Y-linked

137. A 30-year-old man has undergone surgical removal of a thyroid tumor. Histologically the tumor is made up of papillary structures varying in size that emerge from the inner surface of dilated cystic follicles and are covered with atypical epithelium. What is the most likely diagnosis?

- A. Papillary carcinoma
- B. Colloid nodular goiter
- C. Macrofollicular adenoma
- D. Follicular carcinoma
- E. Medullary carcinoma

138. 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. Dicrocoeliasis
- D. Paragonimiasis
- E. Fascioliasis

139. Various biological preparations can be used for poliomyelitis prevention. What drug induces the type of local intestinal mucosal immunity that lasts the longest?

- A. Oral vaccination with live vaccine
- B. Parenteral vaccination with inactivated vaccine
- C. Oral introduction of poliovirus-specific immunoglobulin
- D. Parenteral vaccination with live vaccine
- E. Parenteral introduction of normal human immunoglobulin

140. Histological analysis of a removed skin tumor shows clusters and bands composed of atypical stratified squamous epithelium cells that penetrate into the underlying tissue. What preliminary diagnosis can be made?

- A. Non-keratinizing squamous cell carcinoma
- B. Solid cancer
- C. Carcinoma in situ
- D. Papilloma
- E. Adenoma

141. Autopsy of a patient, who died of bilateral bronchopneumonia, shows in the left lung lower lobe a cavity 5 cm in diameter, filled with yellowish-white liquid. What complication of the patient's pneumonia had developed?

- A. Abscess
- B. Gangrene
- C. Granuloma
- D. Sequestrum
- E. Tuberculoma

142. A patient with parkinsonism was prescribed levodopa, which led to rapid improvement of the patient's condition. What is the mechanism of action of this drug?

- A. Stimulation of dopamine synthesis
- B. Muscarinic acetylcholine receptor blockade
- C. Stimulation of dopamine receptors
- D. Anticholinesterase action
- E. Muscarinic acetylcholine receptor stimulation

143. A sick child presents with high content of phenyl pyruvate in urine (normally it is practically absent). Blood phenylalanine level is 350 mg/L (norm - 15 mg/L). What disease are these symptoms characteristic of?

- A. Phenylketonuria
- B. Albinism
- C. Tyrosinosis
- D. Alkaptonuria
- E. Gout

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

- A. Inferior mesenteric artery
- B. Superior mesenteric artery
- C. Celiac trunk
- D. Middle colic artery
- E. Splenic artery

145. A patient presents with enlarged cervical lymph nodes. Other lymph nodes and internal organs are without changes. Peripheral blood test results are normal. Histological examination of biopsy material taken from the cervical lymph node shows smoothed-out pattern, absent follicles, homogeneous cell composition represented by lymphoblasts. The cells penetrate into the lymph node capsule. What diagnosis can be made?

- A. Lymphoblastic leukemia
- B. Myeloblastic leukemia
- C. Erythroblastic leukemia
- D. Sezary disease
- E. Burkitt lymphoma

146. When studying the pulmonary ventilation values, the reduction of forced expiratory volume has been detected. What is the likely cause of this phenomenon?

- A. Obstructive pulmonary disease
- B. Increase of respiratory volume
- C. Increase of inspiratory reserve volume
- D. Increase of pulmonary residual volume
- E. Increase of functional residual lung capacity

147. A man is a carrier of HIV that is an RNA virus. The cells of this patient synthesize viral DNA. This process is based on:

- A. Reverse transcription
- B. Replication
- C. Transcription
- D. Repair
- E. Translation

148. Sanitary assessment of a pond, where the children from a recreation summer camp take their swims, detected there oval cysts 50-60 micron in diameter, with 2 nuclei visible in their cytoplasm (macronucleus and micronucleus). What protozoa do these cysts belong to?

- A. Balantidium
- B. Lamblia
- C. Toxoplasma
- D. Amoeba
- E. Euglena

149. A hospital has received a 24-year-old man, who had received a penetrating wound to the eye, which has caused the vitreous body to run out. As the result of this, retinal detachment occurred. What retinal layer was tightly adherent to the vascular tunic of the eye and did not detach?

- A. Retinal pigment epithelium
- B. Layer of rods and cones
- C. Ganglion cell layer
- D. Outer nuclear layer
- E. Inner nuclear layer

150. A newborn presents with weak suckling, frequent vomiting, and hypotonia. Blood and urine citrulline are very high. What metabolic process is disturbed?

- A. Ornithine cycle
- B. Tricarboxylic acid cycle
- C. Glycolysis
- D. Gluconeogenesis
- E. Cori cycle

151. Stool test detects in the patients feces a large amount of undigested fats. This patient is the most likely to have disturbed secretion of the following enzymes:

- A. Pancreatic lipases
- B. Pancreatic amylase
- C. Pancreatic proteases
- D. Bile lipase
- E. Gastric protease

152. A 19-year-old young man was examined in the nephrology clinic. High calcium was detected in his secondary urine. What hormone is likely to cause such change, if it is produced in excess?

- A. Aldosterone
- B. Oxytocin
- C. Adrenaline
- D. Glucagon
- E. Testosterone

153. A young woman presents with a tumor along the auditory nerve. The tumor is node-shaped, 3 cm in diameter, soft and elastic, pink-white colored, and has homogeneous structure. Microscopically the tumor contains bundles of cells with oval nuclei. These cellular fibrous bundles form regular structures made up of parallel rows of regularly oriented cells arranged in the form of a palisade with acellular homogeneous area in between (Verocay bodies). Name this type of tumor:

- A. Neurinoma
- B. Malignant neurinoma
- C. Ganglioneuroma
- D. Neuroblastoma
- E. Ganglioneuroblastoma

154. A patient has undergone surgical removal of the pylorus. Decreased secretion of the following hormone can be expected:

- A. Gastrin
- B. Histamine
- C. Secretin
- D. Cholecystokinin
- E. Gastric inhibitory polypeptide

155. An electron micrograph shows a small vessel with endothelial layer but without basement membrane and pericytes; anchoring fibrils are present. Name this vessel:

- A. Lymph capillary
- B. Arteriole
- C. Venule
- D. Sinusoid hemocapillary
- E. Visceral hemocapillary

156. One of the causes of pernicious anemia is disturbed synthesis of transcobalamin - Castle's intrinsic factor - by the parietal cells of the stomach. What substance is called Castle's extrinsic factor?

- A. Cobalamin
- B. Folic acid
- C. Pyridoxine
- D. Riboflavin
- E. Biotin

157. A patient with contact dermatitis needs to be prescribed an antihistamine drug without somnolent effect. Select this drug from the list:

- A. Loratadine
- B. Dimedrol (Benadryl)
- C. Suprastin (Chloropyramine)
- D. Diprazine (Promethazine)
- E. Ranitidine

158. Congenital pyruvate carboxylase deficiency causes physical and mental retardation in children and leads to early death. It is characterized by lactic acidemia, lactaciduria, and a number of metabolic disorders. Among others, inhibition of the following occurs:

- A. Citric acid cycle and gluconeogenesis
- B. Glycolysis and glycogenolysis
- C. Glycogenesis and glycogenolysis
- D. Lipolysis and lipogenesis
- E. Pentose-phosphate pathway and glycolysis

159. A woman with enteritis accompanied by severe diarrhea presents with 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. Hypoosmolar hypohydration
- B. Hyperosmolar hyperhydration
- C. Hyperosmolar hypohydration
- D. Hypoosmolar hyperhydration
- E. Isoosmolar hypohydration

160. To stimulate the labor activity a parturient woman was prescribed a drug - a posterior pituitary hormone that does not affect the blood pressure. As the pregnancy progresses, the sensitivity to this hormone increases. Name the prescribed drug:

- A. Oxytocin
- B. Dinoprostone
- C. Dinoprost
- D. Pituitrin
- E. Ergotal

161. Cell membrane rest potential changed from -85 to -90 mV. It can be caused by activation of the following cell membrane channels:

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

162. Ionizing radiation or vitamin E deficiency affect the cell by increasing lysosome membrane permeability. What are the possible consequences of this pathology?

- A. Partial or complete cell destruction
- B. Intensive protein synthesis
- C. Intensive energy production
- D. Restoration of cytoplasmic membrane
- E. Formation of maturation spindle

163. A patient is diagnosed with glucocerebroside lipidosis (Gaucher's disease) that manifests as splenomegaly, liver enlargement, affected bone tissue, and neuropathies. What enzyme of complex lipid catabolism is deficient, thus causing this disease?

- A. Glucocerebrosidase
- B. Hexosaminidase
- C. Sphingomyelinase
- D. β -galactosidase
- E. Hyaluronidase

164. A 3-year-old girl with mental retardation has been diagnosed with sphingomyelin lipidosis (Niemann-Pick disease). In this condition the synthesis of the following

substance is disturbed:

- A. Sphingomyelinase
- B. Glycosyltransferase
- C. Sphingosine
- D. Ceramides
- E. Gangliosides

165. A traumatology unit has received a patient with a wrist trauma and a clinical presentation of the damage to the nerve that passes through the carpal tunnel. Name this nerve:

- A. *N. medianus*
- B. *N. ulnaris*
- C. *N. radialis*
- D. *N. axillaris*
- E. *N. musculocutaneus*

166. A patient, who has been taking β -adrenergic blockers, developed a bronchial spasm. What group of bronchodilators should be chosen to stop the bronchial spasm?

- A. Myotropic antispasmodics
- B. β -adrenergic blockers
- C. Indirect adrenergic agonists
- D. Muscarinic cholinomimetic agents
- E. Cholinesterase inhibitors

167. A man has an inguinal hernia. The hernial sac exits through the following opening:

- A. *Anulus superficialis canalis inguinalis*
- B. *Foramen suprapiriforme*
- C. *Linea alba*
- D. *Anulus profundus canalis inguinalis*
- E. *Anulus femoralis*

168. After a nephrectomy the patient developed enteroparesis. What cholinergic agent with anticholinesterase action should be prescribed in this case?

- A. Proserin
- B. Carbacholine
- C. Aceclidine
- D. Pilocarpine
- E. Acetylcholine

169. Parenchyma of an organ is composed of pseudounipolar neurons localized under the capsule of connective tissue. Central place belongs to nerve fibers. Name this organ:

- A. Spinal ganglion
- B. Sympathetic ganglion
- C. Intramural ganglion
- D. Nerve trunk
- E. Spinal cord

170. An obstetrician-gynecologist measures pelvis size of a pregnant woman. A caliper

was used to measure the distance between the two iliac crests. What measurement of large pelvis was made?

- A. *Distantia cristarum*
- B. *Distantia throchanterica*
- C. *Distantia spinarum*
- D. *Conjugata vera*
- E. *Conjugata anatomica*

171. Genetic recombination is achieved via several mechanisms. One such mechanism is crossingover. It occurs at the following stage of prophase in the first meiotic division:

- A. Pachynema
- B. Leptonema
- C. Zygonema
- D. Diplonema
- E. Diakinesis

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

- A. Increased period of ventricular excitation
- B. Disturbed conduction in the atrioventricular node
- C. Increased atrial excitability
- D. Increased atrial and ventricular excitability
- E. Increased period of atrial excitation

173. A 50-year-old inpatient during examination presents with glucosuria and blood glucose of 3.0 mmol/L, which are the most likely to be caused by:

- A. Renal disorder
- B. Diabetes insipidus
- C. Myxedema
- D. Essential hypertension
- E. Pellagra

174. A 40-year-old woman was diagnosed with glomerulonephritis based on her clinical symptoms and the results of urine analysis. Anamnesis states chronic tonsillitis. What microorganisms are the most likely cause for her kidney damage?

- A. Streptococci
- B. Staphylococci
- C. Escherichia
- D. Mycoplasma
- E. Meningococci

175. A 7-year-old child presents with marked signs of hemolytic anemia. Biochemical analysis of erythrocytes determined low concentration of NADPH and reduced glutathione. What enzyme is deficient in this case leading to the biochemical changes and their clinical manifestations?

- A. Glucose-6-phosphate dehydrogenase
- B. Hexokinase
- C. Fructokinase
- D. Pyruvate kinase
- E. Lactate dehydrogenase

176. 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. Hashimoto's thyroiditis (chronic lymphocytic thyroiditis)
- B. Papillary thyroid cancer
- C. Undifferentiated thyroid carcinoma
- D. Solid adenoma of the thyroid
- E. Graves' disease (toxic diffuse goiter)

177. An 8-year-old girl presents with signs of disturbed twilight vision. This condition is caused by the deficiency of vitamin:

- A. A
- B. E
- C. D
- D. K
- E. F

178. A 25-year-old young man came to the doctor complaining of general weakness, rapid fatigability, irritability, reduced working ability, and bleeding gums. What vitamin is likely to be deficient in this case?

- A. Ascorbic acid
- B. Riboflavin
- C. Thiamine
- D. Retinol
- E. Folic acid

179. A 52-year-old man presents with fever and pain in the joints. Both of his first metatarsophalangeal articulations are deformed, swollen, and reddened. Blood urea is high. The patient is diagnosed with gout. What is the main developmental factor in the pathogenesis of this disease?

- A. Hyperuricemia
- B. Argininosuccinic aciduria
- C. Hyperazotemia
- D. Hyperaminoacidemia
- E. Citrullinuria

180. A person with the fourth blood group (genotype IAIB) has in erythrocytes both antigen A controlled by allele IA and antigen B controlled by allele IB. This phenomenon is an example of the following gene interaction:

- A. Codominance
- B. Complementarity
- C. Semidominance
- D. Polymery
- E. Epistasis

181. Vascular endothelium is characterized by high metabolic activity and synthesizes vasoactive substances. Among these substances there is a potent vasodilator synthesized from L-arginine. Name this vasodilator:

- A. Nitrogen oxide
- B. Histamine
- C. Bradykinin
- D. Acetylcholine
- E. Adrenaline

182. A victim of a traffic accident was received by the intensive care unit. The patient is in a grave condition that can be characterized as a severe pathologic process that leads to exhaustion of vital functions and puts the patient into the marginal state between life and death due to critical reduction of capillary circulation in the affected organs. The patient is in the state of:

- A. Shock
- B. Collapse
- C. Coma
- D. Agony
- E. Preagony

183. A person becomes less receptive to pain in physically or emotionally straining situations due to activation of:

- A. Antinociceptive system
- B. Thyroid gland functions
- C. Nociceptive system
- D. Adrenal glands functions
- E. Parasympathetic nervous system

184. A patient suffers from posttraumatic hemorrhage that resulted in development of hemorrhagic shock. What volume of circulating blood was lost by the patient?

- A. 25-40%
- B. 40-50%
- C. 12-25%
- D. 50-75%
- E. 3-20%

185. A patient with pulmonary tuberculosis is prescribed the most effective anti-tuberculous antibiotic. Name this drug:

- A. Rifampicin
- B. Tetracycline
- C. Streptocide
- D. Furasolidone
- E. Bactrim (Co-trimoxazole)

186. During surgery performed in abdominal cavity a surgeon located the ligament of liver stretching from the anterior abdominal wall (navel) to the inferior surface of liver. What ligament is it?

- A. Round ligament of the liver
- B. Falciform ligament of the liver
- C. Coronary ligament of the liver
- D. Venous ligament of the liver
- E. Triangular ligament of the liver

187. A patient has disturbed blood supply to the anterior papillary muscle of the left ventricle. What cardiac artery supplies this muscle with blood?

- A. *Ramus interventricularis anterior*
- B. *Ramus interventricularis posterior*
- C. *A. coronaria dextra*
- D. *Ramus circumflexus*
- E. *Ramus marginalis*

188. Autopsy of the body of an elderly man revealed yellow spots and streaks in the aortic intima and white-yellow protruding plaques in the area of aortic bifurcation. Microscopy (with hematoxylin and eosin staining) shows round cavities in the thickened aortic intima. The cavities color orange when stained with sudan 3 and are surrounded with overgrown connective tissue. What process developed in the aortic intima?

- A. Metabolic disorder of cholesterol and cholesterol ethers
- B. Local hyalinosis
- C. Metabolic disorder of neutral fat
- D. Systemic hyalinosis
- E. Secondary amyloidosis

189. An 18-year-old patient has developed candidiasis after the case of pneumonia treated with β -lactam antibiotic. What antimycotic agent should be prescribed?

- A. Fluconazole
- B. Streptomycin
- C. Ampicillin
- D. Phthalylsulfathiazole
- E. Trimethoprim/sulfamethoxazole (Biseptol)

190. Preventive vaccination against poliomyelitis is made with inactivated vaccine introduced parenterally. What immunoglobulins create the postvaccinal immunity in this case?

- A. IgM, IgG
- B. IgG, secretory IgA
- C. IgM, secretory IgA
- D. Serum IgA, IgM
- E. IgE, IgM

191. During pregnancy a woman has been taking an antiepileptic drug - sodium valproate. It resulted in her child developing a vertebral column malformation - *spina bifida*. Name the described effect of the drug:

- A. Teratogenic effect
- B. Immunosuppressive effect
- C. Acquired tolerance
- D. Dependence
- E. Sensitizing effect

192. A patient was prescribed atropine sulfate to treat intestinal colic. What concomitant disease can be a contraindication for this drug?

- A. Glaucoma
- B. Bronchial asthma
- C. Sinus bradycardia
- D. Hypotension
- E. Vertigo

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

- A. Diazepam
- B. Cyclodol (Trihexyphenidyl)
- C. Diprazine (Promethazine)
- D. Sodium bromide
- E. Valerian extract

194. A 48-year-old man is unconscious. He has a history of several syncopal episodes with convulsions. ECG shows deformed QRS complexes unconnected with P waves, atrial contractions are approximately 70/min., ventricular contractions - 25-30/min. Name the type of arrhythmia in this case:

- A. Complete atrioventricular block
- B. First-degree atrioventricular block
- C. Second-degree atrioventricular block
- D. Intraatrial block
- E. Intraventricular block

195. In human organism significant blood loss leads to decreased blood pressure, tachycardia, and weakness. Eventually the sensation of thirst appears. What hormone participates in the development of this sensation?

- A. Angiotensin 2
- B. Cortisol
- C. Serotonin
- D. Dopamine
- E. Adrenalin

196. After a trauma the man has lost skin sensitivity on the lateral surface of his forearm. What nerve of the brachial plexus

provides sensitivity of the affected area?

- A. *N. musculocutaneus*
- B. *N. medianus*
- C. *N. ulnaris*
- D. *N. axillaris*
- E. *N. radialis*

197. Autopsy of a 50-year-old woman, who had been suffering from systemic connective tissue disease, reveals small dense kidneys with lumpy surface. Microscopy of the renal glomeruli detects there foci of fibrinoid necrosis, hyaline thrombi, hematoxylin bodies, and so-called "wire loop thickening" of the basement membranes. What disease can be characterized by such changes in the kidneys?

- A. Systemic lupus erythematosus
- B. Rheumatism
- C. Scleroderma
- D. Rheumatoid arthritis
- E. Dermatomyositis

198. A 4-year-old child presents with numerous carious cavities and yellow-colored teeth. The mother has a history of antibiotic treatment during her pregnancy. What antibiotic was the most likely taken by the child's mother?

- A. Doxycycline
- B. Streptomycin sulfate
- C. Ampicillin
- D. Erythromycin
- E. Cefazolin

199. A patient developed pyoinflammatory process of periodontal tissues 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. Autoinfection
- B. Exogenous infection
- C. Reinfection
- D. Superinfection
- E. Relapse

200. After a hand fracture the man has lost the ability to touch his little finger with the thumb on the affected hand. Examination of the palmar surface shows one of the palmar muscles to be atrophied. Name the affected muscle:

- A. *M. opponens policis*
- B. *Mm. lumbricales*
- C. *Mm. interossei*
- D. *M. flexor digiti minimi*
- E. *M. palmaris brevis*

INSTRUCTIONAL BOOK

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List of abbreviations

A/G	Albumin/globulin ratio	HR	Heart rate
A-ANON	Alcoholics anonymous	IDDM	Insulin dependent diabetes mellitus
ACT	Abdominal computed tomography	IFA	Immunofluorescence assay
ADP	Adenosine diphosphate	IHD	Ischemic heart disease
ALT	Alanin aminotransferase	IU	International unit
AMP	Adenosine monophosphate	LDH	Lactate dehydrogenase
AP	Action potential	MSEC	Medical and sanitary expert committee
ARF	Acute renal failure	NAD	Nicotine amide adenine dinucleotide
AST	Aspartat aminotransferase	NADPH	Nicotine amide adenine dinucleotide phosphate restored
ATP	Adenosine triphosphate	NIDDM	Non-Insulin dependent diabetes mellitus
BP	Blood pressure	PAC	Polyunsaturated aromatic carbohydrates
bpm	Beats per minute	PAS	Periodic acid & Schiff reaction
C.I.	Color Index	pCO ₂	CO ₂ partial pressure
CBC	Complete blood count	pO ₂	CO ₂ partial pressure
CHF	Chronic heart failure	pm	Per minute
CT	Computer tomography	Ps	Pulse rate
DIC	Disseminated intravascular coagulation	r	roentgen
DCC	Doctoral controlling committee	RBC	Red blood count
DM-2	Non-Insulin dependent diabetes mellitus	RDHA	Reverse direct hemagglutination assay
DTP	Anti diphtheria-tetanus vaccine	Rh	Rhesus
ECG	Electrocardiogram	(R)CFT	Reiter's complement fixation test
ESR	Erythrocyte sedimentation rate	RIHA	Reverse indirect hemagglutination assay
FC	Function class	RNA	Ribonucleic acid
FAD	Flavin adenine dinucleotide	RR	Respiratory rate
FADH ₂	Flavin adenine dinucleotide restored	S1	Heart sound 1
FEGDS	Fibro-esophago-gastro-duodenoscopy	S2	Heart sound 2
FMNH ₂	Flavin mononucleotide restored	TU	Tuberculin unit
GIT	Gastrointestinal tract	U	Unit
GMP	Guanosine monophosphate	USI	Ultrasound investigation
Hb	Hemoglobin	V/f	Vision field
HbA1c	Glycosylated hemoglobin	WBC	White blood count
Hct	Hematocrit	X-ray	Roentgenogram
HIV	Human immunodeficiency virus		