

**MINISTRY OF PUBLIC HEALTH OF UKRAINE**

**Department of human resources policy, education and science**

**Testing Board**

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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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1. Characteristic sign of glycogenosis is muscle pain during physical work. Blood examination usually reveals hypoglycemia. This pathology is caused by congenital deficiency of the following enzyme:

- A. Glycogen phosphorylase
- B. Glucose 6-phosphate dehydrogenase
- C.  $\alpha$ -amylase
- D.  $\gamma$ -amylase
- E. Lysosomal glycosidase

2. Histologic specimen of a kidney demonstrates cells closely adjoined to the renal corpuscle in the distal convoluted tubule. Their basement membrane is extremely thin and has no folds. These cells sense the changes in sodium content of urine and influence renin secretion occurring in juxtaglomerular cells. Name these cells:

- A. Macula densa cells
- B. Juxtaglomerular cells
- C. Mesangial cells
- D. Podocytes
- E. Glomerular capillary endothelial cells

3. A 46-year-old female patient has continuous history of progressive muscular (Duchenne's) dystrophy. Which blood enzyme changes will be of diagnostic value in this case?

- A. Creatine phosphokinase
- B. Lactate dehydrogenase
- C. Pyruvate dehydrogenase
- D. Glutamate dehydrogenase
- E. Adenylate cyclase

4. 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

5. A patient has decreased concentration of magnesium ions that are required for ribosomes connection to granular endoplasmic reticulum. This condition is known to disrupt the process of protein biosynthesis. Disruption occurs at the following stage:

- A. Translation
- B. Transcription
- C. Replication
- D. Amino acids activation
- E. Processing

6. A 6-year-old child with suspected active tuberculous process has undergone diagnostic Mantoux test. What immunobiological preparation was injected?

- A. Tuberculin
- B. BCG vaccine
- C. DTP vaccine
- D. Tularinum
- E. Td vaccine

7. During postembryonal haemopoiesis in red bone marrow the cells of one of the cellular differons demonstrate gradual decrease in cytoplasmic basophilia as well as increase in oxyphilia, the nucleus is being forced out. Such morphological changes are typical for the following haemopoiesis type:

- A. Erythropoiesis
- B. Lymphopoiesis
- C. Neutrophil cytopoiesis
- D. Eosinophil cytopoiesis
- E. Basophil cytopoiesis

8. When taking exams students often have dry mouth. The mechanism that causes this state results from the following reflexes:

- A. Conditioned sympathetic
- B. Unconditioned parasympathetic
- C. Conditioned parasympathetic
- D. Unconditioned sympathetic
- E. Unconditioned peripheral

9. A 67-year-old patient with clinical diagnosis of chronic bronchitis, pneumosclerosis, and cardiopulmonary decompensation has the biopsy material taken from the suspicious area in his right bronchus mucosa. Cellular and tissue atypism along with pearly bodies can be histologically detected. What pathologic process is characterized by the described histological changes?

- A. Squamous cell carcinoma of bronchus with keratinization
- B. Polypoid chronic bronchitis
- C. Bronchiectasis
- D. Acute bronchitis
- E. Squamous cell metaplasia of bronchial mucosa

10. A microspecimen of heart shows rectangular cells from 50 to 120 micrometers large with central position of nucleus and developed myofibrils. The cells are connected by intercalated discs. These cells are responsible for the following function:

- A. Function of heart contractions
- B. Function of impulse conduction
- C. Endocrine
- D. Protective
- E. Regenerative

**11.** Untrained people often have muscle pain after sprints as a result of lactate accumulation. This can be caused by intensification of the following biochemical process:

- A.** Glycolysis
- B.** Gluconeogenesis
- C.** Pentose phosphate pathway
- D.** Lipogenesis
- E.** Glycogenesis

**12.** Poisoning caused by botulinum toxin that prevents calcium ions from entering axone nerve endings of motoneurons is life-threatening because it can lead to:

- A.** Respiratory arrest
- B.** Cardiac arrest
- C.** Vasotonic disorder
- D.** Vomiting
- E.** Diarrhea

**13.** Increased HDL levels decrease the risk of atherosclerosis. What is the mechanism of HDL anti-atherogenic action?

- A.** They remove cholesterol from tissues
- B.** They supply tissues with cholesterol
- C.** They are involved in the breakdown of cholesterol
- D.** They activate the conversion of cholesterol to bile acids
- E.** They promote absorption of cholesterol in the intestine

**14.** It has been found out that one of a pesticide components is sodium arsenate that blocks lipoic acid. Which enzyme activity is impaired by this pesticide?

- A.** Pyruvate dehydrogenase complex
- B.** Microsomal oxidation
- C.** Methemoglobin reductase
- D.** Glutathione peroxidase
- E.** Glutathione reductase

**15.** A drycleaner's worker has been found to have hepatic steatosis. This pathology can be caused by the disruption of synthesis of the following substance:

- A.** Phosphatidylcholine
- B.** Tristearin
- C.** Urea
- D.** Phosphatidic acid
- E.** Cholic acid

**16.** A 35-year-old man with peptic ulcer disease has undergone antrectomy. After the surgery secretion of the following gastrointestinal hormone will be disrupted the most:

- A.** Gastrin
- B.** Histamine
- C.** Secretin
- D.** Cholecystokinin
- E.** Neurotensin

**17.** Atretic bodies and developed yellow body can be observed along with follicles of various orders in an ovary specimen. What stage of ovarian and menstrual cycle is characterized by the described ovary condition?

- A.** Premenstrual
- B.** Menstrual
- C.** Postmenstrual
- D.** Regeneration
- E.** Follicle growth

**18.** A 16-year-old adolescent is diagnosed with hereditary UDP (uridine diphosphate) glucuronyltransferase deficiency. Laboratory tests revealed hyperbilirubinemia caused mostly by increased blood content of the following substance:

- A.** Unconjugated bilirubin
- B.** Conjugated bilirubin
- C.** Urobilinogen
- D.** Stercobilinogen
- E.** Biliverdine

**19.** Prior to glucose utilization in cells it is transported inside cells from extracellular space through plasmatic membrane. This process is stimulated by the following hormone:

- A.** Insulin
- B.** Glucagon
- C.** Thyroxin
- D.** Aldosterone
- E.** Adrenalin

**20.** After implantation of a cardiac valve a young man systematically takes indirect anticoagulants. His state was complicated by hemorrhage. What substance content has decreased in blood?

- A.** Prothrombin
- B.** Haptoglobin
- C.** Heparin
- D.** Creatin
- E.** Ceruloplasmin

**21.** A 12-year-old patient has white non-pigmented spots on the skin. The spots appeared after the patient became 10 years old, and they constantly grow. This spots appeared due to the lack of the following skin cells:

- A. Melanocytes
- B. Adipocytes
- C. Fibrocytes
- D. Plasmocytes
- E. Labrocytes

22. A group of Ukrainian tourists returning from Samarqand was bringing with them gerbils. During examination in customs office ulcers were detected on the skin of the animals. What protozoa is the most likely to cause the disease in the animals, if mosquitos are the carriers?

- A. *Leishmania tropica major*
- B. *Balantidium coli*
- C. *Plasmodium falciparum*
- D. *Trypanosoma cruzi*
- E. *Toxoplasma gondii*

23. A 5-year-old child has been diagnosed with acute right distal pneumonia. Sputum inoculation revealed that the causative agent is resistant to penicillin and sensitive to macrolides. What drug should be prescribed?

- A. Azithromycin
- B. Tetracycline
- C. Gentamycin
- D. Streptomycin
- E. Ampicillin

24. To an emergency ward a 7-year-old child was delivered in the condition of allergic shock caused by a bee sting. High concentration of histamine is observed in blood. Production of this amine is the result of the following reaction:

- A. Decarboxylation
- B. Hydroxylation
- C. Dehydrogenation
- D. Deamination
- E. Reduction

25. A 65-year-old man suffering from gout complains of pain in his kidneys. Ultrasonic examination revealed kidney stones. A certain substance in increased concentration can cause kidney stones formation. Name this substance:

- A. Uric acid
- B. Cholesterol
- C. Bilirubin
- D. Urea
- E. Cystine

26. Sex chromatin was detected during examination of a man's buccal epithelium. It is characteristic of the following chromosome disease:

- A. Klinefelter's syndrome
- B. Down's disease
- C. Turner's syndrome
- D. Triple X syndrome
- E. Hypophosphatemic rickets

27. Pure culture of microorganisms was obtained from pharynx of a child with suspected diphtheria. Morphologic, tinctorial, cultural, and biochemical properties of the microorganisms were studied and revealed to be characteristic of diphtheria agents. What investigation should be additionally performed to make a conclusion, that these microorganisms are pathogenic diphtheria bacilli?

- A. Determine toxigenic properties
- B. Determine proteolytic properties
- C. Determine urease activity
- D. Determine cystinase activity
- E. Determine amyolytic activity

28. Autopsy of a man who had tuberculosis revealed a 3x2 cm large cavity in the superior lobe of the right lung. The cavity was interconnected with a bronchus, its wall was dense and consisted of three layers: the internal layer was pyogenic, the middle layer was made of tuberculous granulation tissue and the external one was made of connective tissue. What is the most likely diagnosis?

- A. Fibrous cavernous tuberculosis
- B. Fibrous focal tuberculosis
- C. Tuberculoma
- D. Acute focal tuberculosis
- E. Acute cavernous tuberculosis

29. A 7-year-old child has acute onset of disease: temperature rise up to 38°C, rhinitis, cough, lacrimation, and large-spot rash on the skin. Pharyngeal mucosa is edematous, hyperemic, with whitish spots in the buccal area. What kind of inflammation causes the changes in the buccal mucosa?

- A. Catarrhal inflammation
- B. Suppurative inflammation
- C. Fibrinous inflammation
- D. Hemorrhagic inflammation
- E. Serous inflammation

30. Analysis of sputum taken from a patient with suspected pneumonia revealed slightly elongated gram-positive diplococci with pointed opposite ends. What microorganisms were revealed in the sputum?

- A. *Streptococcus pneumoniae*
- B. *Staphylococcus aureus*
- C. *Klebsiella pneumoniae*
- D. *Neisseria meningitidis*
- E. *Neisseria gonorrhoeae*

31. Serological diagnostics of infectious di-

seases is based upon specific interaction with antigens. Specify the serological reaction that underlies adhesion of microorganisms when they are affected by specific antibodies in presence of an electrolyte:

- A. Agglutination reaction
- B. Precipitation reaction
- C. Complement-binding reaction
- D. Hemadsorption reaction
- E. Neutralization reaction

32. A 4-year-old child was admitted to an orthopaedic department with displaced shin fracture. Bone fragments reposition requires analgesia. What drug should be chosen?

- A. Promedol
- B. Analgin
- C. Morphine hydrochloride
- D. Panadol
- E. -

33. Doctors make mostly radial incisions during mammary gland surgery. What particulars of anatomical organization make such surgical technique preferable?

- A. Lobe apexes converge towards nipples
- B. Lobe bases radiate from nipples
- C. Transversal position of gland lobes
- D. Vertical position of gland lobes
- E. -

34. A 41-year-old man has a history of recurrent attacks of heartbeats (paroxysms), profuse sweating, headaches. Examination revealed hypertension, hyperglycemia, increased basal metabolic rate, and tachycardia. These clinical presentations are typical for the following adrenal pathology:

- A. Hyperfunction of the medulla
- B. Hypofunction of the medulla
- C. Hyperfunction of the adrenal cortex
- D. Hypofunction of the adrenal cortex
- E. Primary aldosteronism

35. A 12-year-old child has developed nephritic syndrome (proteinuria, hematuria, cylindruria) 2 weeks after the case of tonsillitis, which is a sign of affected glomerular basement membrane in the kidneys. What mechanism is the most likely to cause the basement membrane damage?

- A. Immune complex
- B. Granulomatous
- C. Antibody-mediated
- D. Reaginic
- E. Cytotoxic

36. Several minutes after a dentist administered novocaine for local anaesthesia of a patient's tooth, the following symptoms sharply developed in the patient: fatigue,

skin itching. Objectively the following can be observed: skin hyperemia, tachycardia, BP dropped down to 70/40 mm Hg. What kind of allergic reaction is this pathology?

- A. Anaphylactic
- B. Cytotoxic
- C. Stimulating
- D. Cell-mediated immune reaction
- E. Immune complex

37. A patient with probable liver abscess was delivered to a surgical department. The patient for a long time had been on an assignment in an African country and had recurrent cases of acute gastrointestinal disturbance. What protozoan disease can it be?

- A. Amebiasis
- B. Trypanosomiasis
- C. Leishmaniasis
- D. Malaria
- E. Toxoplasmosis

38. Work in a mine is known to cause inhalation of large amounts of coal dust. Inhaled coal dust can be detected in the following pulmonary cells:

- A. Alveolar macrophages
- B. Respiratory epithelial cells
- C. Secretory epithelial cells
- D. Capillary endothelial cells
- E. Pericapillary cells

39. Electrical activity of neurons is being measured. They fire prior to and at the beginning of inhalation. Where are these neurons situated?

- A. Medulla oblongata
- B. Diencephalon
- C. Mesencephalon
- D. Spinal cord
- E. Cerebral cortex

40. Electrocardiogram analysis demonstrates that cardiac cycle of a human equals 1 second. It means that heart rate per minute equals:

- A. 60
- B. 50
- C. 70
- D. 80
- E. 100

41. Glomerular filtration of a person, who has been starving for a long time, has increased by 20%. The most likely cause of filtration changes in the given conditions is:

- A. Decrease of blood plasma oncotic pressure
- B. Increase of systemic blood pressure
- C. Increase of renal filter permeability
- D. Increase of filtration factor
- E. Increase of renal plasma flow

42. Cells of healthy liver actively synthesize glycogen and proteins. What organelles are the most developed in them?

- A. Granular and agranular endoplasmic reticulum
- B. Cell center
- C. Lysosomes
- D. Mitochondria
- E. Peroxisomes

43. Atria of an experimental animal were superdistended with blood, which resulted in decreased reabsorption of  $Na^+$  and water in renal tubules. This can be explained by the influence of the following factor on kidneys:

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

44. A patient with hypertensive crisis has increased content of angiotensin II in blood. Angiotensin pressor effect is based on:

- A. Contraction of arteriole muscles
- B. Activation of biogenic amine synthesis
- C. Prostaglandin hyperproduction
- D. Vasopressin production stimulation
- E. Activation of kinin-kallikrein system

45. A 43-year-old-patient has arterial hypertension caused by increase in cardiac output and general peripheral resistance. Specify the variant of hemodynamic development of arterial hypertension in the given case:

- A. Eukinetic
- B. Hyperkinetic
- C. Hypokinetic
- D. Combined
- E. -

46. A patient has been hospitalised with provisional diagnosis of virus B hepatitis. Serological reaction based on complementation of antigen with antibody chemically bound to peroxidase or alkaline phosphatase has been used for disease diagnostics. Name this serological reaction:

- A. Immune-enzyme analysis
- B. Radioimmunoassay technique
- C. Immunofluorescence test
- D. Bordet-Gengou test
- E. Antigen-binding assay

47. A surgeon has to find the common hepatic duct during operative intervention for treatment of concrements in the gall ducts. The common hepatic duct is located between the leaves of:

- A. Hepatoduodenal ligament
- B. Hepatogastric ligament
- C. Hepatorenal ligament
- D. Round ligament of liver
- E. Venous ligament

48. It is known that the gene responsible for development of blood groups according to ABO system has three allele variants. Existence of the IV blood group can be explained by the following variability form:

- A. Combinative
- B. Mutational
- C. Phenotypic
- D. Genocopy
- E. Phenocopy

49. When measuring power inputs of a person by the method of indirect calorimetry the following results were obtained: oxygen consumption is 1000 ml and carbon dioxide production is 800 ml per minute. The person under examination has the following respiratory coefficient:

- A. 0,8
- B. 1,25
- C. 0,9
- D. 0,84
- E. 1,0

50. On examination of a newborn boy's external genitalia a fissure in the urethra opening on the inferior surface of his penis is detected. What maldevelopment is it?

- A. Hypospadias
- B. Hermaphroditism
- C. Epispadia
- D. Monorchism
- E. Cryptorchidism

51. Poisoning caused by mercury (II) chloride (corrosive sublimate) occurred in the result of safety rules violation. In 2 days the patient's diurnal diuresis became 620 ml. The patient developed headache, vomiting, convulsions, dyspnea; moist crackles are observed in the lungs. Name this pathology:

- A. Acute renal failure
- B. Chronic renal failure
- C. Uremic coma
- D. Glomerulonephritis
- E. Pyelonephritis

52. For people adapted to high external temperatures profuse sweating is not accompanied by loss of large volumes of sodium chloride. This is caused by the effect the following hormone has on the perspiratory glands:

- A. Aldosterone
- B. Vasopressin
- C. Cortisol
- D. Thyroxin
- E. Natriuretic

53. Along with normal hemoglobin types there can be pathological ones in the organism of an adult. Name one of them:

- A. HbS
- B. HbF
- C. HbA<sub>1</sub>
- D. HbA<sub>2</sub>
- E. HbO<sub>2</sub>

54. Emotional stress causes activation of hormon-sensitive triglyceride lipase in the adipocytes. What secondary mediator takes part in this process?

- A. Cyclic adenosine monophosphate
- B. Cyclic guanosine monophosphate
- C. Adenosine monophosphate
- D. Diacylglycerol
- E. Ions of Ca<sup>2+</sup>

55. A patient has been diagnosed with alkaptonuria. Choose an enzyme that can cause this pathology when deficient:

- A. Homogentisic acid oxidase
- B. Phenylalanine hydroxylase
- C. Glutamate dehydrogenase
- D. Pyruvate dehydrogenase
- E. Dioxyphenylalanine decarboxylase

56. As a result of a continuous chronic encephalopathy a patient has developed spontaneous motions and disorder of torso muscle tone. These are the symptoms of the disorder of the following conduction tract:

- A. *Tractus rubrospinalis*
- B. *Tractus corticospinalis*
- C. *Tractus corticonuclearis*
- D. *Tractus spinothalamicus*
- E. *Tractus tectospinalis*

57. A child is 10 years old. The following presentations have developed: sharp pain during swallowing, swollen neck, body temperature rise up to 39,0°C, bright-red finely papular rash all over the body. Pharynx

and tonsils are sharply hyperemic ("flaming pharynx"), "crimson tongue". On the tonsils surface there are isolated greyish necrosis focuses. What disease it might be?

- A. Scarlet fever
- B. Meningococcal nasopharyngitis
- C. Diphtheria
- D. Influenza
- E. Measles

58. A patient suffers from intermittent fevers and normalizations of body temperature that occur during the day. The temperature rise is observed regularly every fourth day. Specify the type of temperature curve:

- A. *Febris internuttens*
- B. *Febris continua*
- C. *Febris reccurens*
- D. *Febris hectica*
- E. *Febris remitens*

59. 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 can the father have?

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

60. A patient is diagnosed with hereditary coagulopathy that is characterised by factor VIII deficiency. Specify the phase of blood clotting during which coagulation will be disrupted in the given case:

- A. Thromboplastin formation
- B. Thrombin formation
- C. Fibrin formation
- D. Clot retraction
- E. -

61. Angiocardiology of a 60-year-old man revealed constriction of the vessel located in the left coronary sulcus of his heart. Name this pathological vessel:

- A. *Ramus circumflexus*
- B. *Ramus interventricularis posterior*
- C. *A. coronaria dextra*
- D. *V. cordis parva*
- E. *Ramus interventricularis anterior*

62. A patient complains of pain in the right lateral abdomen. Palpation revealed a dense, immobile, tumor-like formation. The tumor is likely to be found in the following part of the digestive tube:

- A. *Colon ascendens*
- B. *Colon transversum*
- C. *Colon descendens*
- D. *Colon sigmoideum*
- E. *Caecum*

63. During regular check-up a child is detected with interrupted mineralization of the bones. What vitamin deficiency can be the cause?

- A. Calciferol
- B. Riboflavin
- C. Tocopherol
- D. Folic acid
- E. Cobalamin

64. During histological analysis of the lymph node situated in the posterior neck triangle of an 18-year-old patient a morphologist detected a cluster of cells including the following: isolated multinucleate Reed-Sternberg cells, large and small Hodgkin's cells and numerous lymphocytes, isolated plasma cells, eosinophils. What disease has developed in the patient?

- A. Lymphogranulomatosis
- B. Nodular lymphoma
- C. Burkitt's lymphoma
- D. Lymphocytic lymphoma
- E. Chronic lymphocytic leukemia

65. An infant has pylorospasm, weakness, hypodynamia, convulsions as a result of frequent vomiting. What kind of acid-base disbalance is it?

- A. Excretory alkalosis
- B. Excretory acidosis
- C. Metabolic acidosis
- D. Exogenous nongaseous acidosis
- E. Gaseous alkalosis

66. A 39-year-old man who had been operated for the stomach ulcer died 7 days after the surgery. Autopsy revealed that peritoneal leaves were dull, plephoric, covered with massive yellow-greenish films, the peritoneal cavity contained about 300 ml of thick yellow-greenish liquid. What pathologic process was revealed in the peritoneal cavity?

- A. Fibrinous suppurative peritonitis
- B. Serous peritonitis
- C. Fibrinous serous peritonitis
- D. Peritoneal commissures
- E. Fibrinous haemorrhagic peritonitis

67. 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

68. A patient with urolithiasis has developed severe pain attacks. For pain shock prevention he was administered an antispasmodic narcotic analgesic along with atropine. Name this drug:

- A. Promedol
- B. Nalorphine
- C. Tramadol
- D. Ethylmorphine hydrochloride
- E. Morphine hydrochloride

69. A patient with acute myocardial infarction has been administered heparin as a part of complex therapy. Some time after heparin injection the patient developed hematuria. What heparin antagonist should be injected to remove the complication?

- A. Protamine sulfate
- B. Vicasol
- C. Aminocaproic acid
- D. Neodicumarin
- E. Fibrinogen

70. A 37-year-old woman complains of headache, vertigo, troubled sleep, numbness of limbs. For the last 6 years she has been working at a gas-discharge lamp-producing factory in a lead-processing shop. Blood test findings: low hemoglobin and RBC level, serum iron concentration exceeds the norm by several times. Specify the type of anemia:

- A. Iron refractory anemia
- B. Iron-deficiency anemia
- C. Minkowsky-Shauffard disease
- D. Hypoplastic anemia
- E. Metaplastic anemia

71. Despite the administration of cardiotonics and thiazide diuretic a patient with chronic heart failure has persistent edemas and the risk of ascites arose. What medication should be administered to enhance the diuretic effect of the administered drugs?

- A. Spironolactone
- B. Furosemide
- C. Amiloride
- D. Clopamide
- E. Manithol

72. 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 convoluted tubules, tubulorrhexis, phlebostasis. The cell nuclei of choroid glomus and straight tubules were present. What pathology is it?

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

**73.** A 3-year-old child with meningeal symptoms died. Postmortem macroscopy of the pia matter revealed miliary nodules which were microscopically represented by a focus of caseous necrosis with masses of epithelioid and lymphoid cells with large cells containing crescent-shaped peripheral nuclei situated between them. Specify the type of meningitis in the child:

- A. Tuberculous
- B. Syphilitic
- C. Brucellar
- D. Grippal
- E. Meningococcal

**74.** A 66-year-old woman had intravenous injection of magnesium sulfate solution to stop hypertensive crisis. However her arterial pressure did not decrease and after repeated introduction of the same preparation she developed sluggishness, slow response to stimuli; the patient is unconsciousness and her respiration is inhibited. What preparation is antagonist of magnesium sulfate and can remove the symptoms of its overdose?

- A. Calcium chloride
- B. Potassium chloride
- C. Sodium chloride
- D. Activated carbon
- E. Potassium permanganate

**75.** A patient working at a pig farm complains of paroxysmal abdominal pain, liquid feces with mucus and blood, headache, weakness, fever. Examination of large intestine revealed ulcers from 1 mm up to several cm in diameter, feces contained oval unicellular organisms with cilia. What disease can be suspected?

- A. Balantidiasis
- B. Amebiasis
- C. Toxoplasmosis
- D. Lambliasis
- E. Trichomoniasis

**76.** An unconscious patient was delivered by ambulance to the hospital. On objective examination the patient was found to present no reflexes, periodical convulsions, irregular breathing. After laboratory examination the patient was diagnosed with

th hepatic coma. Disorders of the central nervous system develop due to accumulation of the following metabolite:

- A. Ammonia
- B. Urea
- C. Glutamine
- D. Bilirubin
- E. Histamine

**77.** When playing a child received a hit to the presternum region. As a result of this trauma an organ located behind the presternum was damaged. Name this organ:

- A. Thymus
- B. Thyroid gland
- C. Heart
- D. Pericardium
- E. Larynx

**78.** A child suffers from dry cough. What non-narcotic antitussive drug will relieve the patient's condition?

- A. Glaucine hydrochloride
- B. Codeine phosphate
- C. Morphine hydrochloride
- D. Potassium iodide
- E. Althaea officinalis root extract

**79.** A patient complains of acute pain attacks in the right lumbar region. During examination a nephrolithic obturation of the right ureter in the region between its abdominal and pelvic segments has been detected. What anatomical boundary exists between those two segments?

- A. *Linea terminalis*
- B. *Linea semilunaris*
- C. *Linea arcuata*
- D. *Linea transversa*
- E. *Linea inguinalis*

**80.** A patient has insufficient blood supply to the kidneys, which has caused the development of pressor effect due to constriction of arterial resistance vessels. This condition results from the vessels being strongly affected by the following substance:

- A. Angiotensin II
- B. Angiotensinogen
- C. Renin
- D. Catecholamines
- E. Norepinephrine

**81.** In a village a case of anthrax has been registered. Medical services began epidemiologically indicated specific prophylaxis of population against anthrax. What preparation was used for this purpose?

- A. Live vaccine
- B. Inactivated vaccine
- C. Chemical vaccine
- D. Genetically engineered vaccine
- E. Anatoxin

**82.** Experimental stimulation of the sympathetic nerve branches that innervate the heart caused an increase in the force of heart contractions because the membrane of typical cardiomyocytes permitted an increase in:

- A. Calcium ion entry
- B. Calcium ion exit
- C. Potassium ion exit
- D. Potassium ion entry
- E. Calcium and potassium ion exit

**83.** According to the results of glucose tolerance test a patient has no disorder of carbohydrate tolerance. Despite that glucose is detected in the patients's urine (5 mmol/l). The patient has been diagnosed with renal diabetes. What renal changes cause glucosuria in this case?

- A. Decreased activity of glucose reabsorption enzymes
- B. Increased activity of glucose reabsorption enzymes
- C. Exceeded glucose reabsorption threshold
- D. Increased glucose secretion
- E. Increased glucose filtration

**84.** Alveolar space of acinus was invaded by bacteria that interacted with the surfactant. This led to the activation of the cells that are localized in the alveolar walls and on the surface. Name these cells:

- A. Alveolar macrophages
- B. Alveolocytes type I
- C. Endothelial cells
- D. Clara cells
- E. Alveolocytes type II

**85.** Parents of a 5-year-old boy report him to have frequent colds that develop into pneumonias, presence of purulent rashes on the skin. Laboratory tests have revealed the following: absence of immunoglobulins of any type, and naked cells are absent from the lymph nodes punctate. What kind of immune disorder is it?

- A. X-linked hypogammaglobulinemia (Bruton type agammaglobulinemia)
- B. Autosomal recessive agammaglobulinemia (Swiss type)
- C. Hypoplastic anemia
- D. Agranulocytosis
- E. Louis-Barr syndrome

**86.** Examination of a 42-year-old patient revealed a tumour of adenohypophysis.

Objectively: the patient's weight is 117 kg, he has moon-like hyperemic face, red-blue striae of skin distension on his belly. Osteoporosis and muscle dystrophy are present. AP is 210/140 mm Hg. What is the most probable diagnosis?

- A. Cushing's disease
- B. Cushing's syndrome
- C. Conn's disease
- D. Diabetes mellitus
- E. Essential hypertension

**87.** 2 days after labour a woman developed shock along with DIC syndrome that caused her death. Autopsy revealed purulent endomyometritis, regional purulent lymphangitis, lymphadenitis and purulent thrombophlebitis. There were also dystrophic alterations and interstitial inflammation of parenchymal organs. What is the most likely diagnosis?

- A. Septicemia
- B. Syphilis
- C. Tuberculosis of genital organs
- D. Chorioadenoma destruens
- E. Hydatid mole

**88.** In case of alkaptonuria, homogentisic acid is excreted in urine in large amounts. The development of this disease is associated with metabolic disorder of the following amino acid:

- A. Tyrosine
- B. Phenylalanine
- C. Alanine
- D. Methionine
- E. Asparagine

**89.** When blood circulation in the damaged tissue is restored, lactate accumulation stops and glucose consumption decelerates. These metabolic changes are caused by activation of the following process:

- A. Aerobic glycolysis
- B. Anaerobic glycolysis
- C. Lipolysis
- D. Gluconeogenesis
- E. Glycogen biosynthesis

**90.** A doctor examined a patient, studied the blood analyses, and reached a conclusion, that peripheral immunogenesis organs are affected. What organs are the most likely to be affected?

- A. Tonsils
- B. Thymus
- C. Kidneys
- D. Red bone marrow
- E. Yellow bone marrow

**91.** A doctor asked a patient to make a deep exhalation after a normal inhalation. What

muscles contract during such exhalation?

- A. Abdominal muscles
- B. External intercostal muscles
- C. Diaphragm
- D. Trapezius muscles
- E. Pectoral muscles

92. A 4-year-old child with hereditary renal lesion has signs of rickets; vitamin D concentration in blood is normal. What is the most probable cause of rickets development?

- A. Impaired synthesis of calcitriol
- B. Increased excretion of calcium
- C. Hyperfunction of parathyroid glands
- D. Hypofunction of parathyroid glands
- E. Lack of calcium in food

93. In a cat with decerebrate rigidity the muscle tone is to be decreased. This can be achieved by:

- A. Destruction of the vestibular nuclei of Deiters
- B. Stimulation of the otolithic vestibular receptors
- C. Stimulation of the vestibular nuclei of Deiters
- D. Stimulation of the vestibulocochlear nerve
- E. Stimulation of the ampullar vestibular receptors

94. Autopsy of a 5-year-old child revealed in the area of vermis of cerebellum a soft greyish-pink node 2 cm in diameter with blurred margins and areas of haemorrhage. Histologically this tumour consisted of atypical monomorphous small round cells with large polymorphous nuclei. What tumour is it?

- A. Medulloblastoma
- B. Meningioma
- C. Glioblastoma
- D. Astrocytoma
- E. Oligodendroglioma

95. Surface with an intact toad on it was inclined to the right. Tone of extensor muscles became reflexively higher due to the activation of the following receptors:

- A. Vestibuloreceptors of utricle and saccule
- B. Vestibuloreceptors of semicircular ducts
- C. Mechanoreceptors of foot skin
- D. Photoreceptors of retina
- E. Proprioceptors

96. A patient with high-titer antinuclear antibodies died from progressing renal impairment. Autopsy revealed mesangioliferative glomerulonephritis and abacterial polyposis endocarditis. Periarterial bulbar sclerosis was detected in spleen and productive proliferative vasculitis in

skin. What is the most likely diagnosis?

- A. Systemic lupus erythematosus
- B. Nephrotic syndrome
- C. Rheumatism
- D. Dermatomyositis
- E. Periarteritis nodosa

97. When studying the signs of pulmonary ventilation, 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

98. A specimen of a parenchymal organ shows poorly delineated hexagonal lobules surrounding a central vein, and the interlobular connective tissue contains embedded triads (an artery, a vein and an excretory duct). What organ is it?

- A. Liver
- B. Pancreas
- C. Thymus
- D. Spleen
- E. Thyroid

99. A patient had a trauma that caused dysfunction of motor centres regulating activity of head muscles. In what parts of cerebral cortex can the respective centre normally be located?

- A. Inferior part of precentral gyrus
- B. Superior part of precentral gyrus
- C. Supramarginal gyrus
- D. Superior parietal lobule
- E. Angular gyrus

100. During intravenous saline transfusion a patient's condition deteriorated drastically, and the patient died from asphyxiation. Autopsy revealed acute venous congestion of internal organs with sharp right heart dilatation. When the right ventricle was punctured underwater, the bubbles escaped. What pathological process occurred in the patient?

- A. Air embolism
- B. Gaseous embolism
- C. Adipose embolism
- D. Tissue embolism
- E. Thromboembolism

101. Diseases of respiratory system and circulatory disorders impair the transport of oxygen, thus causing hypoxia. Under these conditions the energy metabolism is carried out by anaerobic glycolysis. As a result,

the following substance is generated and accumulated in blood:

- A. Lactic acid
- B. Pyruvic acid
- C. Glutamic acid
- D. Citric acid
- E. Fumaric acid

**102.** Examination of a 6-month-old child revealed a delay in closure of the occipital fontanelle. When should it normally close?

- A. Before 3 months
- B. Before the child is born
- C. Before 6 months
- D. Before the end of the first year of life
- E. Before the end of the second year of life

**103.** Sex chromosomes of a woman didn't separate and move to the opposite poles of a cell during gametogenesis (meiosis). The ovum was impregnated with a normal spermatozoon. Which chromosomal disease can be found in her child?

- A. Turner's syndrome
- B. Down's syndrome
- C. Patau's syndrome
- D. Edwards' syndrome
- E. Cat cry syndrome

**104.** A patient was prescribed loratadine to treat allergic cheilitis. What is the mechanism of action of this drug?

- A. Blockade of  $H_1$ -histamine receptors
- B. Blockade of adrenergic receptors
- C. Increases activity of monoamine oxidase
- D. Suppresses activity of  $Na^+/K^+$ -ATPase
- E. Suppresses activity of choline esterase

**105.** During introduction of local anesthesia a patient has gone into anaphylactic shock. What drug must be administered to the patient?

- A. Epinephrine hydrochloride
- B. Diazepam
- C. Atropine sulfate
- D. Propranolol
- E. Nitroglycerin

**106.** A patient has been diagnosed with influenza. His condition drastically worsened after taking antipyretic drugs. He is unconscious, AP is 80/50 mm Hg, Ps is 140/m, body temperature dropped down to 35,8°C. What complication developed in this patient?

- A. Collapse
- B. Hyperthermia
- C. Hypovolemia
- D. Acidosis
- E. Alkalosis

**107.** An alcoholic has alcoholic psychosis with evident psychomotor agitation. What neuroleptic drug should be administered for emergency aid?

- A. Aminazine
- B. Diazepam
- C. Sodium bromide
- D. Reserpine
- E. Halothane

**108.** During blood transfusion a patient has developed intravascular erythrocyte hemolysis. What kind of hypersensitivity does the patient have?

- A. II type (antibody-dependent)
- B. I type (anaphylactic)
- C. III type (immune complex)
- D. IV type (cellular cytotoxicity)
- E. IV type (granulomatosis)

**109.** In the course of an experiment thalamocortical tracts of an animal were cut. What type of sensory perception remained intact?

- A. Olfactory
- B. Auditory
- C. Exteroreceptive
- D. Visual
- E. Nociceptive

**110.** A 4-year-old child presents with general weakness, sore throat and deglutitive problem. After his examination a doctor suspected diphtheria and sent the material to a bacteriological laboratory. To determine the diphtheria causative agent the material should be inoculated into the following differential diagnostic medium:

- A. Blood tellurite agar
- B. Endo's agar
- C. Ploskyrev's agar
- D. Sabouraud's agar
- E. Levenshtein-Yessen agar

**111.** When treating a patient with chronic cardiac failure a doctor detected bradycardia and deterioration of the patient's general state. Such condition is caused by cumulative effect of a drug. Which drug of those listed below has cumulative action?

- A. Digoxin
- B. Diphenhydramine (Dimedrol)
- C. Hydrochlorothiazide
- D. Isosorbide
- E. Retinol acetate

**112.** A doctor was addressed by a 30-year-old man. There is a probability of the patient being HIV-positive. To clarify the diagnosis the doctor proposed to perform polymerase chain reaction. The basic process in this kind

of investigation is:

- A. Gene amplification
- B. Transcription
- C. Genetic recombination
- D. Genomic mutation
- E. Chromosome mutation

**113.** Due to the use of poor-quality measles vaccine for preventive vaccination, a 1-year-old child developed an autoimmune renal injury. The urine was found to contain macromolecular proteins. What process of urine formation was disturbed?

- A. Filtration
- B. Reabsorption
- C. Secretion
- D. Reabsorption and secretion
- E. Secretion and filtration

**114.** A 26-year-old female patient with bronchitis has been administered a broad spectrum antibiotic as a causal treatment drug. Specify this drug:

- A. Doxycycline
- B. Interferon
- C. BCG vaccine
- D. Ambroxol
- E. Dexamethasone

**115.** A 65-year-old man suddenly lost vision in one eye due to the retinal detachment. The patient underwent enucleation. Histological examination of the removed eye retina and choroid revealed clusters of atypical cells with marked polymorphism of cells and nuclei, with a moderate number of mitoses including the pathological ones. The cell cytoplasm and intercellular medium contained brown pigment resulting in positive DOPA reaction. Perls' reaction was negative. What is the most likely diagnosis?

- A. Melanoma
- B. Pigmented mole
- C. Hemorrhage
- D. Cysticercosis
- E. Wilson's disease

**116.** During determining the blood group according to the AB0 system with salt solutions of monoclonal antibodies agglutination did not occur with any of the solutions. What blood group is it?

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

**117.** One of the factors that cause obesity is inhibition of fatty acids oxidation due to:

- A. Low level of carnitine
- B. Impaired phospholipid synthesis
- C. Excessive consumption of fatty foods
- D. Choline deficiency
- E. Lack of carbohydrates in the diet

**118.** During ventricular systole the cardiac muscle does not respond to additional stimulation because it is in the phase of:

- A. Absolute refractoriness
- B. Relational refractoriness
- C. Hyperexcitability
- D. Subnormal excitability
- E. There is no correct answer

**119.** A patient is diagnosed with acute morphine hydrochloride intoxication. Prescribe the oxidizing agent for gastric lavage:

- A. Potassium permanganate
- B. Chloramine
- C. Sulfocamphocainum (Procaine + Sulfocamphoric acid)
- D. Cerigel
- E. Chlorhexidine (bi)gluconate

**120.** During cell division DNA replication occurs after a signal is received from the cytoplasm, then a certain portion of the DNA helix unwinds and splits into two individual strands. What enzyme facilitates this process?

- A. Helicase
- B. RNA polymerase
- C. Ligase
- D. Restrictase
- E. DNA polymerase

**121.** A patient has been given atropine sulfate for rapid relief of spastic colon symptoms. The use of this drug is contraindicated during the following disease:

- A. Glaucoma
- B. Bronchial asthma
- C. Bradycardia
- D. Hypotension
- E. Gastric ulcer

**122.** As an example of specific human parasites one can name Plasmodium falciparum, human pinworm and some others. The source of parasite invasion in these cases is always a human. Such specific human parasites cause the diseases that are called:

- A. Anthroponoses
- B. Zoonoses
- C. Anthrozooses
- D. Infections
- E. Multifactorial diseases

**123.** In the course of an experiment there has been increase in nerve conduction

velocity. This may be caused by increase in concentration of the following ions that are present in the solution around the cell:

- A.  $Na^+$
- B.  $K^+$  and  $Cl^-$
- C.  $K^+$  and  $Na^+$
- D.  $Ca^{2+}$  and  $Cl^-$
- E.  $Ca^{2+}$

**124.** An HIV-positive patient's cause of death is acute pulmonary insufficiency resulting from pneumonia. Pathohistological investigation of lungs has revealed interstitial pneumonia, alveolocyte desquamation and metamorphoses: alveolocyte enlargement, large intranuclear inclusions surrounded by lightly-coloured areas. Transformed cells resemble owl's eye. Name the causative agent of pneumonia:

- A. Cytomegalovirus
- B. Pneumococcus
- C. Influenza virus
- D. *Candida* fungi
- E. Toxoplasma

**125.** The organisms to be identified have a nucleus surrounded by a nuclear membrane. Genetic material is concentrated predominantly in the chromosomes that consist of DNA strands and protein molecules. These cells divide mitotically. Identify these organisms:

- A. Eukaryotes
- B. Bacteriophages
- C. Prokaryotes
- D. Viruses
- E. Bacteria

**126.** A 2-year-old boy is diagnosed with Down syndrome. What chromosomal changes may be the cause of this disease?

- A. Trisomy 21
- B. Trisomy 13
- C. Trisomy X
- D. Trisomy 18
- E. Monosomy X

**127.** After a road accident a victim has tachycardia, arterial blood pressure 130/90 mm Hg, tachypnoe, the skin is pale and dry, excitation of central nervous system is observed. What shock stage is the patient most likely in?

- A. Erectile
- B. Terminal
- C. Torpid
- D. Preshock (compensation stage)
- E. Agony

**128.** As a result of a mechanical injury an over 10 cm long portion of a peripheral

nerve was damaged. This caused an impairment of the upper limb activity. The patient was offered nerve transplantation. What glial cells will participate in regeneration and provide the trophism of the injured limb?

- A. Schwann cells
- B. Fibrous cells
- C. Protoplasmic cells
- D. Microglia
- E. Ependymal cells

**129.** A 47-year-old man developed intestinal colic against the background of essential hypertension. In this situation it would be most efficient to arrest the colic by administering drugs of the following group:

- A. Myotropic antispasmodics
- B. Anticholinesterase agents
- C. Sympathomimetics
- D. M-cholinomimetics
- E. Adrenomimetics

**130.** Microscopy of a female patient's swabs made from vaginal secretion revealed gram-negative bean-shaped diplococci. What provisional diagnosis can be made?

- A. Gonorrhoea
- B. Syphilis
- C. Chlamydiosis
- D. Mycoplasmosis
- E. Toxoplasmosis

**131.** A 54-year-old woman was brought to a casualty department after a car accident. A traumatologist diagnosed her with multiple fractures of the lower extremities. What kind of embolism is most likely to develop in this case?

- A. Adipose
- B. Tissue
- C. Thromboembolism
- D. Gaseous
- E. Air

**132.** A therapist has an appointment with a 40-year-old patient complaining of recurrent pain attacks in his hallux joints and their swelling. Urine analysis revealed its marked acidity and pink colour. What substances can cause such changes in the urine?

- A. Uric acid salt
- B. Chlorides
- C. Ammonium salts
- D. Calcium phosphate
- E. Magnesium sulfate

**133.** A 30-year-old man with diabetes mellitus type I was hospitalised. The patient is comatose. Laboratory tests revealed hyperglycemia and ketonemia. What metabolic disorder can be detected

in this patient?

- A. Metabolic acidosis
- B. Metabolic alkalosis
- C. Respiratory acidosis
- D. Respiratory alkalosis
- E. Normal acid-base balance

**134.** A 15-year-old patient has fasting plasma glucose level 4,8 mmol/l, one hour after glucose challenge it becomes 9,0 mmol/l, in 2 hours it is 7,0 mmol/l, in 3 hours it is 4,8 mmol/l. Such parameters are characteristic of:

- A. Subclinical diabetes mellitus
- B. Diabetes mellitus type 1
- C. Diabetes mellitus type 2
- D. Healthy person
- E. Cushing's disease

**135.** A patient has undergone surgical removal of a cavitory liver lesion 2 cm in diameter. It was revealed that the cavity wall was formed by dense fibrous connective tissue; the cavity contained murky thick yellowish-green fluid with an unpleasant odor. Microscopically the fluid consisted mainly of polymorphonuclear leukocytes. What pathological process are these morphological changes typical for?

- A. Chronic abscess
- B. Acute abscess
- C. Phlegmon
- D. Empyema
- E. -

**136.** A patient consulted a physician about chest pain, cough, fever. Roentgenography of lungs revealed eosinophilic infiltrates which were found to contain the larvae. What kind of helminthiasis are these presentations typical for?

- A. Ascariasis
- B. Echinococcosis
- C. Fascioliasis
- D. Cysticercosis
- E. Trichinosis

**137.** During appendectomy a patient had the a. appendicularis ligated. This vessel branches from the following artery:

- A. *A. ileocolica*
- B. *A. colica dextra*
- C. *A. colica media*
- D. *A. sigmoidea*
- E. *A. mesenterica inferior*

**138.** A 28-year-old patient undergoing treatment in a pulmonological department has been diagnosed with pulmonary emphysema caused by splitting of alveolar septum by tissular tripsin. The disease is caused by the congenital deficiency of the

following protein:

- A.  $\alpha_1$ -proteinase inhibitor
- B.  $\alpha_2$ -macroglobulin
- C. Cryoglobulin
- D. Haptoglobin
- E. Transferrin

**139.** A patient, who has been suffering for a long time from intestine disbacteriosis, has increased hemorrhaging caused by disruption of posttranslational modification of blood-coagulation factors II, VII, IX, and X in the liver. What vitamin deficiency is the cause of this condition?

- A. K
- B. B<sub>12</sub>
- C. B<sub>9</sub>
- D. C
- E. P

**140.** During a surgery for femoral hernia a surgeon operates within the boundaries of femoral trigone. What structure makes up its upper margin?

- A. *Lig. inguinale*
- B. *Arcus iliopectineus*
- C. *Lig. lacunare*
- D. *Lig. pectinale*
- E. *Fascia lata*

**141.** 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*

**142.** A patient has arterial hypertension. What long-acting drug from the group of calcium channel blockers should be prescribed?

- A. Amlodipine
- B. Octadine
- C. Pyrroxanum
- D. Atenolol
- E. Reserpine

**143.** A patient has been diagnosed with URTI. Blood serum contains immunoglobulin M. What stage of infection is it?

- A. Acute
- B. Prodromal
- C. Incubation
- D. Reconvalescence
- E. Carriage

**144.** A 43-year-old patient suffers from acute pancreatitis with disrupted common bile duct patency. What condition can develop in this case?

- A. Mechanical jaundice
- B. Hemolytic jaundice
- C. Hepatocellular jaundice
- D. Hepatic coma
- E. Portal hypertension

**145.** A patient has a tumor of the eyesocket tissues behind the eyeball. Disruption of accommodation and pupil constriction is observed. What anatomical structure is damaged?

- A. *Ganglion ciliare*
- B. *N. nasociliaris*
- C. *N. lacrimalis*
- D. *N. opticus*
- E. *N. trochlearis*

**146.** Lymphocytes and other cells of our body synthesize universal antiviral agents as a response to viral invasion. Name these protein factors:

- A. Interferon
- B. Interleukin - 2
- C. Cytokines
- D. Interleukin - 4
- E. Tumor necrosis factor

**147.** A patient consulted a dentist about restricted mouth opening (trismus). Anamnesis states a stab wound of the lower extremity. What infection may cause these symptoms?

- A. Tetanus
- B. Brucellosis
- C. Whooping cough
- D. Wound anaerobic infection
- E. Tularemia

**148.** A patient has damaged spinal cord white matter in the middle area of the posterior white column, disrupted proprioceptive sensibility of the lower limb joints and muscles. What fibers are affected?

- A. *Fasciculus gracilis*
- B. *Tr. spinothalamicus lateralis*
- C. *Tr. spinocerebellaris anterior*
- D. *Tr. spinocerebellaris posterior*
- E. *Fasciculus cuneatus*

**149.** In an elderly person the change in heart force and vessels physical properties were detected; they can be clearly observed on graphic recording of carotid pulse waves. What method was applied?

- A. Sphygmography
- B. Plethysmography
- C. Rheography
- D. Myography
- E. Phlebography

**150.** A patient has developed paroxysmal ventricular tachycardia against the background of cardiac infarction. What antiarrhythmic drug should be chosen to avoid lowering cardiac output?

- A. Lidocaine hydrochloride
- B. Procainamide
- C. Verapamil
- D. Propranolol
- E. Potassium chloride

**151.** Electrocardiogram of a young man reveals deviation of his electrical axis of heart to the left. This phenomenon can be caused by:

- A. Hypersthenic body type
- B. Asthenic body type
- C. Dilation of the right atrium
- D. Dilation of the right ventricle
- E. Dilation of the left atrium

**152.** A 6-year-old child suffers from delayed growth, disrupted ossification processes, decalcification of the teeth. What can be the cause?

- A. Vitamin D deficiency
- B. Decreased glucagon production
- C. Insulin deficiency
- D. Hyperthyroidism
- E. Vitamin C deficiency

**153.** A 30-year-old patient's blood test revealed the following: erythrocyte count is  $6 \cdot 10^{12}/l$ , hemoglobin is 10,55 ммоль/l. Vaquez's disease was diagnosed. Name the leading part of pathogenesis:

- A. Neoplastic erythroid hyperplasia
- B. Iron-deficiency
- C.  $B_{12}$ -deficiency
- D. Hypoxia
- E. Acidosis

**154.** A 25-year-old patient complains of increasing pain in his leg muscles occurring during walking and forcing him to make frequent stops. Objectively: skin of legs is pale, no hair-covering, toenails are with trophic changes, no pulsation of pedal arteries. The most probable cause of these changes is:

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

**155.** This year influenza epidemic is characterised by patients' body temperature varying from  $36,9^{\circ}\text{C}$  to  $37,9^{\circ}\text{C}$ . Such fever is called:

- A. Subfebrile
- B. High
- C. Hyperpyretic
- D. Apyretic
- E. Moderate

**156.** A woman complains of visual impairment. Examination revealed obesity in the patient and her fasting plasma glucose level is hyperglycemic. What diabetes complication can cause visual impairment/blindness?

- A. Microangiopathy
- B. Macroangiopathy
- C. Atherosclerosis
- D. Neuropathy
- E. Glomerulopathy

**157.** Prolonged treatment of hypothyroidism has caused general dystrophy, dental caries, tachycardia, tremor of extremities. What drug is the cause of these side effects?

- A. L-thyroxin
- B. Humulin (Human insulin)
- C. Parathyroidinum
- D. Thyrocalcitonin
- E. Prednisolone

**158.** A 3-year-old child has eaten some strawberries. Soon he developed a rash and itching. What was found in the child's leukogram?

- A. Eosinophilia
- B. Hypolymphemia
- C. Neutrophilic leukocytosis
- D. Monocytosis
- E. Lymphocytosis

**159.** A patient has been found to have a marked dilatation of the saphenous veins in the region of anterior abdominal wall around the navel. This is symptomatic of pressure increase in the following vessel:

- A. *V. portae hepatis*
- B. *V. cava superior*
- C. *V. cava inferior*
- D. *V. mesenterica inferior*
- E. *V. mesenterica superior*

**160.** Cholesterol content in blood serum of a 12-year-old boy is  $25\text{ mmol/l}$ . Anamnesis states hereditary familial hypercholesterolemia caused by synthesis disruption of receptor-related proteins for:

- A. Low-density lipoproteins
- B. High-density lipoproteins
- C. Chylomicrons
- D. Very low-density lipoproteins
- E. Middle-density lipoproteins

**161.** Obesity is a common disease. The aim of its treatment is to lower content of neutral fats in the body. What hormone-sensitive enzyme is the most important for intracellular lipolysis?

- A. Triacylglycerol lipase
- B. Protein kinase
- C. Adenylate kinase
- D. Diacylglycerol lipase
- E. Monoacylglycerol lipase

**162.** 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

**163.** A man is suffering from diarrhea. In summer he spent his vacation in the south at the sea coast. Bacteria with the following properties were detected in his feces: gram-negative curved mobile monotrichous bacilli that do not produce spores or capsules. They are undemanding to nutrient medium but require alkaline reaction (pH 8,5-9,5). Described are the agents of the following enteric infection:

- A. Cholera
- B. Shigellosis
- C. Typhoid fever
- D. Colienteritis
- E. Pseudotuberculosis

**164.** A patient is diagnosed with chronic atrophic gastritis attended by deficiency of Castle's intrinsic factor. What type of anemia does the patient have?

- A.  $B_{12}$ -deficiency anemia
- B. Iron refractory anemia
- C. Hemolytic anemia
- D. Iron-deficiency anemia
- E. Protein-deficiency anemia

**165.** A pregnant woman was detected with IgM to rubella virus. An obstetrician-gynecologist recommended therapeutic abortion due to the high risk of teratogenic affection of the fetus. Detection of IgM was of great importance as it is these specific immunoglobulins that:

- A. Indicate recent infection
- B. Penetrate placental barrier
- C. Have the largest molecular weight
- D. Are associated with anaphylactic reactions
- E. Are the main factor of antiviral protection

**166.** A patient is diagnosed with cardiac infarction. Blood test for cardiospecific enzymes activity was performed. Which of the enzymes has three isoforms?

- A. Creatine kinase
- B. Lactate dehydrogenase
- C. Aspartate transaminase
- D. Alanine transaminase
- E. Pyruvate kinase

**167.** A 50-year-old man, who has been suffering from chronic hepatic failure for several years, has developed ascites. What is the main mechanism of this disorder development?

- A. Increased pressure in portal vein system
- B. Decrease of albumin and globulin synthesis in liver
- C. Increased content of low-density and very low-density lipoproteins in blood
- D. Neurotoxins appearing in blood
- E. Increase of blood oncotic pressure

**168.** A 30-year-old man has sustained an injury to his thorax in a traffic incident, which caused disruption of his external respiration. What type of ventilatory difficulty can be observed in the given case?

- A. Restrictive extrapulmonary ventilatory impairment
- B. Restrictive pulmonary ventilatory impairment
- C. Obstructive ventilatory impairment
- D. Impaired ventilation regulation dysfunction
- E. Cardiovascular collapse

**169.** A 53-year-old man suffering from diabetes mellitus has developed a painful conical induration, bluish-red with yellow center, on the skin of his neck. Such changes are characteristic of:

- A. Furuncle
- B. Abscess
- C. Carbuncle
- D. Phlegmon
- E. Empyema

**170.** Biochemical analysis of an infant's erythrocytes revealed evident glutathione peroxidase deficiency and low concentration of reduced glutathione. What pathological condition can develop in this infant?

- A. Hemolytic anemia
- B. Pernicious anemia
- C. Megaloblastic anemia
- D. Sicklemlia
- E. Iron-deficiency anemia

**171.** In winter a 3-year-old child has sharp rise of body temperature up to  $40^{\circ}\text{C}$ . Hemorrhagic rash is observed on the skin and mucosa. Bean-shaped gram-negative microorganisms situated in pairs are detected in the blood. What provisional diagnosis can be made?

- A. Meningococcosis
- B. Gonorrhoea
- C. Scarlet fever
- D. Influenza
- E. Diphtheria

**172.** Microelectrode analysis of nerve fiber bioelectrical activity revealed, that its membrane potential equals 90 mV. Its initial rest potential was 85 mV. What process occurs in this case?

- A. Hyperpolarization
- B. Depolarization
- C. Repolarization
- D. Overshoot
- E. Supernormality

**173.** Parkinson's disease is caused by disruption of dopamine synthesis. What brain structure synthesizes this neurotransmitter?

- A. Substantia nigra
- B. Globus pallidus
- C. Corpora quadrigemina
- D. Red nucleus
- E. Hypothalamus

**174.** Determining a patient's blood group with monoclonal test-reagents revealed positive agglutination reaction to anti-A and anti-B reagents, and negative reaction to anti-D. What blood group does this patient have?

- A. IV (AB)  $Rh^{-}$
- B. II (A)  $Rh^{+}$
- C. III (B)  $Rh^{-}$
- D. IV (AB)  $Rh^{+}$
- E. I (0)  $Rh^{+}$

**175.** A patient visited a dentist to extract a tooth. After the tooth had been extracted, bleeding from the tooth socket continued for 15 minutes. Anamnesis states that the patient suffers from active chronic hepatitis. What phenomenon can extend the time of hemorrhage?

- A. Decrease of fibrinogen content in blood
- B. Thrombocytopenia
- C. Hypocalcemia
- D. Increased activity of anticoagulation system
- E. Decrease of albumine content in blood

176. Name the halogen-containing antiseptic with fungicidal properties, which is used to treat dermatomycosis:

- A. Iodine solution
- B. Formalin solution
- C. Methylene blue
- D. Brilliant green
- E. Boric acid solution

177. Due to severe pain syndrome a patient was prescribed a narcotic analgesic. Name this drug:

- A. Morphine
- B. Metamizole (Analgin)
- C. Nimesulide
- D. Dimethyl sulfoxide
- E. Indometacin

178. During pathomorphological kidney investigation of a patient, who for a long time had been suffering from osteomyelitis and died from progressing renal failure, the following was revealed: deposits of homogeneous eosinophilic masses in glomerular mesangium, arterial and arteriolar walls, and stroma, which became red when stained with Congo red. What pathological process is this?

- A. Amyloidosis
- B. Mucoïd swelling
- C. Calcinosis
- D. Carbohydrate degeneration
- E. Hyalinosis

179. A microslide presents a tissue with spherical cells, each of them containing a large fat drop covered with thin cytoplasm layer in its center. Nucleus is compressed and situated at the cell periphery. What tissue is it?

- A. White adipose tissue
- B. Brown adipose tissue
- C. Mucous tissue
- D. Pigmented tissue
- E. Reticular tissue

180. To treat rheumatoid arthritis a 65-year-old woman was prescribed an immunosuppressive hormonal drug as a part of her complex therapy. Name this drug:

- A. Prednisolone
- B. Thymus cytomedins (Thymalin)
- C. Chloropyramine (Suprastin)
- D. Riboflavin
- E. Fercovenum

181. An experiment was aimed at testing flexor reflex in a spinal frog, which was initiated by simultaneous stimulation with isolated pre-threshold electrical impulses. The frequency of those impulses was such, that the reflex occurred. What process in the nerve centers can be observed during this experiment?

- A. Temporal summation
- B. Spatial summation
- C. Presynaptic summation
- D. Postsynaptic summation
- E. Threshold summation

182. A patient diagnosed with acute dysentery has been treated for 3 days in an infectious diseases hospital. On admission there were complaints of high temperature, stomachache and fluid excrements with mucus as often as 8-10 times a day. What sample should be taken for analysis?

- A. Feces
- B. Urine
- C. Bile
- D. Liquor
- E. Blood

183. An 18-year-old woman has body disproportion, wing-like folds on the skin of her neck, underdeveloped ovaries, nuclei of her buccal epithelium cells have no Barr bodies. Dermatoglyphics method revealed that her adt angle is 66°. What provisional diagnosis can be made in this case?

- A. Turner's syndrome
- B. Cri du chat (cat cry) syndrome
- C. Klinefelter's syndrome
- D. Patau's syndrome
- E. Edwards' syndrome

184. A 27-year-old patient with injury to the neck has lost approximately 30% of the blood volume. The patient's condition is severe: blood pressure is 60/40 mm Hg, heart rate is 140/min., respiratory rate is 30/min., conscious. Characterize the condition of the patient's circulatory system:

- A. Hypovolemic shock
- B. Cardiogenic shock
- C. Collapse
- D. Coma
- E. Arterial hypertension

185. A soldier with explosion-caused trauma was delivered to a hospital. Examination revealed his tympanic membrane to be

intact. What defense reflex prevented the tympanic membrane from rupturing?

- A. Contraction of *m. tensor tympani*
- B. Relaxation of *m. tensor tympani*
- C. Contraction of *m. auricularis anterior*
- D. Relaxation of *m. auricularis anterior*
- E. Relaxation of *m. stapedius*

186. 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

187. During narcosis a patient developed a risk of cerebral edema. What drug should be administered in this case?

- A. Furosemide
- B. Dopamine
- C. Phenazepam
- D. Triamterene
- E. Sodium bromide

188. During surgery performed in abdominal cavity a surgeon located ligament of liver stretching from anterior abdominal wall (navel) to 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

189. A 9-year-old boy has acute onset of disease: sore throat, body temperature rise up to 39,5°C; on the second day diffuse skin rash was detected all over his skin except for nasolabial triangle. On examination of oral cavity: crimson tongue, "flaming pharynx", necrotic tonsillitis. What diagnosis is the most likely?

- A. Scarlet fever
- B. Measles
- C. Diphtheria
- D. Influenza
- E. Meningococemia

190. A 49-year-old man complains of pain in his metatarsophalangeal joints and joint deformation. In blood hyperuricemia can be observed. X-ray has revealed metatarsophalangeal joint space narrowing, erosion, periarticular calcification of the both joints, osteoporosis. Microscopy

has revealed inflammatory granulomatous reaction surrounding necrotizing masses in the area of the first metatarsophalangeal joint. Choose the most likely diagnosis:

- A. Gout (podagra)
- B. Pyrophosphate arthropathy
- C. Rheumatoid arthritis
- D. Hyperparathyroidism
- E. Urolithiasis

191. Granulomas containing lymphocytes and macrophages were detected during analysis of skin biopsy material. Among macrophages there are large cells with fat inclusions, which contain microorganisms in spheric packages (Virchow's cells). The following disease is based on the described type of hypersensitivity:

- A. Leprosy
- B. Syphilis
- C. Tuberculosis
- D. Rhinoscleroma
- E. Epidemic typhus

192. A patient with suspected necrosis of the upper abdominal cavity organs was delivered to a surgical department. This condition is associated with acute circulatory disturbance of the following vessel:

- A. *Tuncus coeliacus*
- B. *A. mesenterica inferior*
- C. *A. mesenterica superior*
- D. *A. iliaca communis*
- E. *A. renalis*

193. Name the drug that inhibits excretory function of pancreas during treatment of acute pancreatitis:

- A. Contrykal (Aprotinin)
- B. Allochol
- C. Panzynom
- D. Pancreatin (Mezym forte)
- E. Festal

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

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

195. During autopsy of a 9-month-old girl's body, who died due to severe pneumonia complicated with sepsis, lack of thymus is observed. In the lymph nodes the lymphoid follicles and cortical substance are absent; follicles of spleen are reduced in size with

no light zones and plasma cells. What is the cause of such structural changes?

- A. Thymus agenesis
- B. Accidental involution of thymus
- C. Thymus hypoplasia
- D. Thymus atrophy
- E. Thymus aplasia

**196.** A patient with femoral neck fracture, who for a long time had to remain in bed in a forced (supine) position, has developed dark-brown lesions along the backbone; soft tissues are swollen, in the areas of maceration there is a foul-smelling liquid. Name the clinicopathologic type of necrosis:

- A. Bedsore
- B. Infarction
- C. Sequestrum
- D. Coagulation necrosis
- E. Dry gangrene

**197.** A woman poisoned with unknown substance was hospitalised in a toxicological department. What group of drugs can be administered to decrease absorption and introduction of the poison to her body?

- A. Adsorbents
- B. Neuroleptics
- C. Antioxidants
- D. Organic nitrates
- E. Cholinesterase inhibitors

**198.** A patient after disrupted cerebral circulation has developed paralysis. Choose the anticholinesterase drug to be prescribed in this case:

- A. Proserin
- B. Cordiamin
- C. Aceclidine
- D. Methacin
- E. Hexamethonium (Benzohexonium)

**199.** A 50-year-old woman is being treated for shingles in a neurology unit. What reactivated virus causes this disease?

- A. Varicella zoster virus (chickenpox virus)
- B. Herpes simplex virus type 1
- C. Herpes simplex virus type 2
- D. Measles virus
- E. Cytomegalovirus

**200.** During examination of a patient a doctor should use anatomical division of anterior abdominal wall into regions for more precise diagnostics. How many such regions can abdomen be divided into?

- A. 9
- B. 8
- C. 6
- D. 5
- E. 4

## **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 <sub>2</sub> | CO <sub>2</sub> partial pressure                       |
| CBC               | Complete blood count                    | pO <sub>2</sub>  | CO <sub>2</sub> 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 <sub>2</sub> | Flavin adenine dinucleotide restored    | S1               | Heart sound 1                                          |
| FEGDS             | Fibro-esophago-gastro-duodenoscopy      | S2               | Heart sound 2                                          |
| FMNH <sub>2</sub> | 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            |                  |                                                        |