

1. As a result of industrial exposure to chromium compounds, a woman has developed allergic dermatitis on both her hands. What skin cells are mainly involved in the manifestation of this disease?

- a. Neutrophils
- b. Tissue basophils
- c. Macrophages
- d. Plasma cells
- e. Lymphocytes

2. X-ray of the skull base bones revealed enlarged sella turcica cavity, thinned out anterior clinoid processes, and destruction of various sella turcica regions. This type of bone destruction can be caused by a tumor of the following endocrine gland:

- a. Thyroid
- b. Thymus
- c. Epiphysis
- d. Hypophysis
- e. Adrenal glands

3. A patient with cholelithiasis has fatty colorless stool because of obturation of the biliary tract. What bile component is absent, causing steatorrhea in the patient?

- a. Fatty acids
- b. Alkaline phosphatase
- c. Cholesterol
- d. Bile acids
- e. Bile pigments

4. Дефіцит якого фактора згортання крові спричиняє захворювання гемофілію В?

- a. VIII
- b. V
- c. VII
- d. XI
- e. IX

5. A 14-year old girl presents to the emergency department for evaluation of an <<infected leg>>. She states there is no history of trauma but mentions she had a history of sickle cell disease. On physical examination, her upper part of right shin is very painful, red, swollen and hot. Her temperature is 39.2°C) An X-ray shows focal bony lysis and loss of trabecular architecture in the metaphysis of right tibia. Increased activity of which of the following cells is the most likely cause of bone reabsorption in this patient?

- a. Osteoblasts
- b. Chondroblasts
- c. Chondrocytes
- d. Osteoclasts
- e. Osteocytes

6. A woman complains of leg edema, cyanotic skin, and small ulcers on the side of the lateral malleolus. Examination detects swelling, enlarged veins, and formation of nodes. What vein is involved in the pathology in this case?

- a. V. saphena magna
- b. V. femoralis
- c. V. profunda femoris
- d. V. saphena parva
- e. V. iliaca externa

7. In Tay-Sachs amaurotic idiocy that has an autosomal recessive pattern of inheritance, irreversible severe disorders of the central nervous system develop, leading to death in early childhood. In this disease, disturbed metabolism of certain substances is observed. Name these substances.

- a. Carbohydrates
- b. Minerals

c. Amino acids

d. Lipids

e. Nucleic acids

8. A woman came to a medical and genetic consultancy requesting to assess the risk of hemophilia in her children. Her husband has hemophilia. History-taking revealed that the woman's family had no cases of hemophilia. What is the risk of this couple giving birth to a child with this disease?

a. 75%

b. Absent

c. 50%

d. 25%

e. 100%

9. Brain MRI shows a local dilation (aneurysm) of an artery in the lateral sulcus. What vessel has pathological changes in this case?

a. A. communicans posterior

b. A) cerebri posterior

c. A) cerebri media

d. A) cerebri anterior

e. A. communicans anterior

10. In course of an experiment there has been an increase in the nerve conduction velocity. This may be caused by an increase in the concentration of the following ions that are present in the solution around the cell:

a. \$Ca^{2+} and \$Cl^-

b. K<sup>+</sup> and \$Na<sup>+</sup>

c. \$Na<sup>+</sup>

d. \$Ca^{2+}

e. K<sup>+</sup> and \$Cl^-

11. In the removed uterus of a 55-year-old woman, a pathologist has found a dense node in the thick of the myometrium. The node is 5 cm in diameter and has clear boundaries. On section, its tissues are gray-pink and fibrous. Microscopically, the tumor consists of smooth muscle cells that form bundles of varying thickness, which run in different directions, and of layers of connective tissue, hyalinized in some places. What tumor has developed in the patient?

a. Myosarcoma

b. Fibroma

c. Fibromyoma

d. Fibrosarcoma

e. Rhabdomyoma

12. During a surgery, a patient developed signs of dithilane (suxamethonium) overdose. What will reduce the effects of intoxication in this case?

a. Anticholinesterase drugs

b. Nicotinic antagonists

c. Ganglionic blockers

d. Muscarinic antagonists

e. Blood transfusion

13. Жінка віком 48 років із діагнозом радикуліт скаржиться на сильний бальовий синдром. З анамнезу відомо, що проходить лікування з приводу виразкової хвороби дванадцятипалої кишки. Який селективний блокатор ЦОГ-2 необхідно призначити пацієнтці?

a. Диклофенак-натрію

b. Аспірин

c. Целекоксіб

d. Мітамізол натрію

e. Індометацин

14. A 38-year-old woman, who was diagnosed with systemic lupus erythematosus (SLE) 3 years ago,

comes to her physician with a complaint of facial swelling and decreased urination that she first noticed 2 weeks ago. She currently takes azathioprine and corticosteroid. Her vital signs show blood pressure 150/90 mm Hg, pulse --- 91/min., temperature --- 36.8°C and respiratory rate --- 15/min. On physical examination, the doctor notices erythematous rash on her face exhibiting a butterfly pattern. The laboratory studies reveal hypercholesterolemia, hypertriglyceridemia and proteinuria. Which of the following is the most likely mechanism of SLE's complication in this patient?

- a. Immune complex-mediated glomerular disease
- b. Increased plasma oncotic pressure
- c. ---
- d. Decrease in renal blood flow (ischemic nephropathy)
- e. Acute infection of the kidney

15. Examination of a patient with signs of hypertension shows that it would be most advisable to prescribe him a medicine that changes the blood pressure via the renin-angiotensin system. Name this medicine:

- a. Dibazol (Bendazol)
- b. Apressin (Hydralazine)
- c. Octadine (Guanethidine)
- d. Anaprilin (Propranolol)
- e. Lisinopril

16. Bacteriological analysis of tap water shows the following: total bacterial count in 1.0 mL of water is 80, coli index is 3. What would be the conclusion?

- a. The water is polluted
- b. The water is safe for consumption
- c. The water quality is extremely \\ dubious
- d. The water quality is dubious
- e. The water is extremely polluted

17. Transcription is the reaction of mRNA matrix synthesis on DNA matrix. Name the stages of transcription.

- a. Initiation, elongation, translation
- b. Initiation, processing, splicing
- c. Initiation, elongation, termination
- d. Processing, splicing, termination
- e. Initiation, translation, elongation

18. У семирічної дитини захворювання почалося гостро з гіпертермії, катаральних явищ, проносу. На другому тижні приєдналися порушення дихання, в'ялий параліч нижніх кінцівок, рентгенологічно – двобічна вогнищева пневмонія. Під час аутопсії у передніх рогах спинного мозку виявлено вогнища гліальної реакції довкола загиблих нейронів. Яке захворювання спричинило смерть дитини?

- a. Менінгіт
- b. Менінгоенцефаліт
- c. Поліомієліт
- d. Мієліт
- e. Полірадикулоневріт

19. A patient was hospitalized with the following diagnosis: exacerbated peptic ulcer disease of the duodenum, duodenal bulb ulcer. Gastric juice analysis shows high secretory and acid-producing function of the stomach. What drug inhibits the secretory function of the gastric glands by blocking H<sub>2</sub> receptors?

- a. Famotidine
- b. Platiphyllin
- c. Belladonna dry extract
- d. Atropine
- e. Methacin

20. After an intracerebral hemorrhage, the patient's speech became indistinct. Sound production in the larynx and movements of the lower jaw are retained. The nuclei of what nerves have been affected by the hemorrhage in this case?

- a. Nuclei n. accessorii
- b. Nuclei n. glossopharyngeus
- c. Nuclei n. facialis
- d. Nuclei n. hypoglossi**
- e. Nuclei n. vagi

21. A patient has an angina pectoris attack. What myotropic drug with resorptive action can be used to stop the attack?

- a. Nitroglycerin
- b. Menthol
- c. Anaprilin (Propranolol)
- d. Validol (Menthyl isovalerate)**
- e. Nitrosorbide (Isosorbide dinitrate)

22. A child inhaled a button that was later removed from the right main bronchus using a bronchoscope. What bronchial epithelium is most likely to be damaged by such a foreign body?

- a. Transitional epithelium
- b. Ciliated pseudostratified epithelium**
- c. Unstratified low prismatic epithelium
- d. Non-keratinized stratified epithelium
- e. Unstratified squamous epithelium

23. During the surgery for a femoral hernia, the doctor operates within the borders of the femoral triangle. What structure forms its upper border?

- a. Arcus iliopectineus
- b. Lig. pectinale
- c. Lig. lacunare
- d. Fascia lata
- e. Lig. inguinale**

24. Під час проведення аутопсії жінки віком 58 років, яка хворіла на цукровий діабет, при гістологічному дослідженні нирок виявлено у клубочках сегментарні гомогенні оксифільні відкладення, стінки артеріол дифузно потовщені, гомогенні, оксифільні. Який патологічний стан виник у клубочках і судинах нирок?

- a. Гіаліново-крапельна дистрофія
- b. Гіаліноз**
- c. Мукоїдне набухання
- d. Амілоїдоз
- e. Фібриноїдне набухання

25. У померлого від хронічної ниркової недостатності макроскопічно нирка збільшена, щільна, на зразі має жовтувато-блій колір і нагадує старе сало - <<сал'на нирка>>. Укажіть патологічний процес.

- a. Фібриноїдне набухання
- b. Гіаліново-крапельна дистрофія
- c. Гіаліноз
- d. Жирова дистрофія
- e. Амілоїдоз**

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

- a. Trisomy X
- b. Trisomy 13
- c. Monosomy X
- d. Trisomy 21**

e. Trisomy 18

27. A patient with hyperthyroidism has high body temperature. What energy metabolism disorder is the leading one in the rise of the body temperature in this case?

- a. Increased glycogen breakdown
- b. Enzyme activation in the respiratory chain
- c. Enzyme activation in the Krebs cycle
- d. Separation of oxidation and oxidative phosphorylation**
- e. Increased lipolysis

28. A newborn delivered at 33 weeks of gestation has a respiratory rate of 70/min. and heart rate of 148/min. 2 hours after birth. He is grunting and has intercostal and subcostal retractions. He has peripheral cyanosis as well. An immediate chest radiograph is taken which shows a fine reticular granulation with ground glass opacity on both lungs. A neonatologist suggests respiratory distress syndrome due to surfactant deficiency. Which of the following is the most likely mechanism of these clinical and imaging findings?

- a. Decreased airways resistance
- b. Increased lung ventilation
- c. ---
- d. Tendency of alveoli to collapse**
- e. Decreased respiratory muscle work

29. In an experiment on an animal, the removal of a section of the cerebral cortex erased the previously developed conditioned reflexes in response to light stimulation. What section of the cortex was removed?

- a. Postcentral gyrus
- b. Temporal lobe
- c. Limbic cortex
- d. Precentral gyrus
- e. Occipital cortex**

30. In a patient with diabetes mellitus, regeneration processes are reduced and wounds do not heal for a long time. What metabolic changes cause this condition in the patient?

- a. Acidosis
- b. Inhibition of protein synthesis**
- c. Reduced glucose supply to the cells
- d. Lipid metabolism disorder
- e. Accumulation of ketone bodies

31. Because of a cerebral hemorrhage, a patient developed impaired speech perception (sensory aphasia). What brain structure is likely to be damaged in this case?

- a. Inferior temporal gyrus
- b. Superior temporal gyrus
- c. Superior frontal gyrus
- d. Postcentral gyrus
- e. Inferior frontal gyrus**

32. A 39-year-old man comes to the doctor with complaints of chest pain and cough with occasionally blood-streaked sputum. He does not have increased temperature or night sweating and his history is insignificant for smoking or alcohol abuse. However, he mentions visiting a few weeks ago a relative who owns a sheep farm. Radiographic examination shows a cyst in the left lower lobe with calcification. Casoni test is positive. Which of the following organisms is the most likely cause of this patient's condition?

- a. Pork tapeworm
- b. Echinococcus**
- c. Dwarf tapeworm
- d. Liver fluke
- e. Fish tapeworm

33. The cardiology department has received a patient with complaints of tachycardia, shortness of breath, and cyanotic mucosa. Examination detects leg edemas and ascites. What drug must be prescribed to the patient in this case?

- a. Corglycon (Convallaria glycosides)
- b. Adrenaline hydrochloride
- c. No-spa (Drotaverine)
- d. Cordiamine (Nikethamide)
- e. Digitoxin

34. A patient with chronic bronchitis was prescribed a drug with mucolytic action. Name this drug:

- a. Anaprilin (Propranolol)
- b. Paracetamol
- c. Atropine sulfate
- d. Ambroxol
- e. Magnesium sulfate

35. The patient's ECG shows an increased duration of the QRS complex. What is the likely cause of this finding?

- a. Increased atrial and ventricular excitability
- b. Increased ventricular excitation time
- c. Increased atrial excitation time
- d. Increased atrial excitability
- e. Disturbed conduction in the atrioventricular nodes

36. A patient with signs of jaundice has been hospitalized into the surgical department. Normally, bile does not enter the blood stream from the bile capillaries. What ultrastructural features of the hepatocyte structure contribute to this phenomenon?

- a. Polygonal shape of hepatocytes
- b. Microvilli on the surface of the capillaries
- c. Close contacts between hepatocytes
- d. No proper wall in bile capillaries
- e. Biliary surface in hepatocytes

37. Examination of a patient with a hearing impairment shows that the pathological process is localized at the level of the lateral lemniscus formation. At what level does it normally form in the brain?

- a. Medulla oblongata
- b. Metencephalon (pons)
- c. Mesencephalon
- d. Cervical spinal cord
- e. Thoracic spinal cord

38. Під час гістологічного дослідження аутопсійного матеріалу від померлої вагітної жінки в мікроциркуляторному руслі легень виявлено клітини плоского епітелію шкіри ембріона, пушкове волосся, казеозну змазку і муцини з травного тракту ембріона. Також в легенях визначається набряк, дифузне ушкодження альвеол та системний тромбоз фібриновими тромбами. Який вид емболії розвинувся у жінки?

- a. Амніотична
- b. Повітряна
- c. Газова
- d. Тромбоемболія
- e. Жирова

39. Elevated blood homocysteine is a risk factor for cardiovascular pathology. This amino acid is formed in the body from:

- a. Cystine
- b. Methionine
- c. Cysteine

- d. Alanine
- e. Folic acid

40. Histological microslide shows a vessel with the wall that consists of endothelium, basement membrane, and loose connective tissue. What type of vessel is it?

- a. Muscular vein
- b. Artery
- c. Lymphocapillary
- d. Non-muscular vein**
- e. Hemocapillary

41. A 50-year-old man suddenly developed intense palpitations, pain in the heart, acute weakness, increased blood pressure, and an irregular pulse with pulse deficit. ECG shows f-waves instead of a P wave; R-R intervals are irregular. What heart rhythm disorder is observed in the patient?

- a. Paroxysmal tachycardia
- b. Transverse heart block
- c. Respiratory sinus arrhythmia
- d. Ciliary arrhythmia**
- e. Sinus extrasystole

42. After 10 days of treatment with an antibiotic, a patient developed signs of dysbiosis: dyspepsia, candidiasis, jaundice, and photosensitization, which indicates that this antibiotic belongs to the following group:

- a. Rifampicin group
- b. Cephalosporin group
- c. Penicillin group
- d. Tetracycline group**
- e. Aminoglycoside group

43. A person with suspected liver abscess has been admitted into the surgical department of a hospital. This person was on a business trip in one of the African countries for a long time and repeatedly had been suffering from an acute gastrointestinal disease. What protozoan disease is likely in this patient?

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

44. Яку функцію виконують келихоподібні клітини одношарового багаторядного війчастого епітелію бронхів ?

- a. Скоротливу
- b. Всмоктувальну
- c. Залозисту**
- d. Камбіальну
- e. Опорну

45. During an exam, the student's absolute pain threshold is higher than when the student is at rest. What system activates in the body, causing this phenomenon?

- a. Parasympathetic nervous system
- b. Pituitary-adrenal system
- c. Sympathetic nervous system
- d. Sympathoadrenal system
- e. Antinociceptive system**

46. A group of scientists studying the properties of cardiac muscle cells in vitro decides to conduct an experiment. They reveal that a stimulation of sympathetic innervation of the heart has a positive inotropic effect on the myocardium (i.e., increased contractility). Which of the following modifications of ion conductance in myocardial cell is most likely responsible for such changes in contractility?

- a. ---
- b. Outward potassium current
- c. Inward potassium current
- d. Outward calcium current
- e. Inward calcium current

47. При розвитку анафілактичних реакцій спостерігаються виражені гіперемія, набряк слизових та біль. Який медіатор анафілаксії визначає розвиток вищезгаданих розладів?

- a. Фактори хемотаксису
- b. Білки комплементу
- c. Фактор активації тромбоцитів
- d. Гістамін
- e. Гепарин

48. A patient complains of paroxysmal pain in the area of upper teeth and lip. The pain radiates into the infraorbital region. Examination detects disturbed sensitivity in the area of the lip, cheek, and wings of the nose. What nerve is affected in this case?

- a. Maxillary
- b. Accessory
- c. Facial
- d. Ophthalmic
- e. Mandibular

49. A patient presents with smoothed out right nasolabial fold and dilated right palpebral fissure (it cannot be closed during squinting, because the eyelids do not close). The patient has problems with talking and eating (food sticks between the cheek and teeth). What nerve is damaged in this case?

- a. N. trigeminus dexter
- b. N. facialis dexter
- c. N. glossopharyngeus sinister
- d. N. abducens dexter
- e. N. vagus dexter

50. Oral mucosa sometimes can be traumatized during tooth brushing. However, such bleeding quickly stops by itself due to the presence of the following in the saliva:

- a. Amylolytic enzymes
- b. Minerals
- c. Procoagulants
- d. Lipolytic enzymes
- e. Lysozyme and mucin

51. Під час мікроскопічного дослідження: клітини овальної форми, розміром 150 мкм, цитоплазма з включеннями жовтка, але не виявлено центролей. Укажіть цю клітину.

- a. Міоцит
- b. Лейкоцит
- c. Макрофаг
- d. Овоцит
- e. Фібробласт

52. Pathologies of lipid metabolism include sphingolipidoses that can be characterized by the accumulation of excess phospholipids and sphingolipids, mainly in the nervous tissue. What disease is associated with accumulation of GM2 ganglioside in the body?

- a. Niemann-Pick disease
- b. Krabbe disease
- c. Fabry disease
- d. Gaucher disease
- e. Tay-Sachs disease

53. У п`ятирічної дитини зі спадковим ураженням нирок під час огляду виявлено ознаки рапіту, в лабораторних показниках концентрація вітаміну D в нормі. Яка найімовірніша причина

розвитку рапіту?

- a. Підвищена екскреція кальцію
- b. Гіпофункція паращитовидних залоз
- c. Гіперфункція паращитовидних залоз
- d. Недостатність кальцію в їжі
- e. Порушення синтезу кальцитріолу

54. Genealogical analysis of a family with a hereditary pathology of optic nerve atrophy has determined that this medical condition is passed on only by the mothers, both girls and boys can be affected, and the sick father does not pass on the disease to his daughters or sons. What type of hereditary disease is it?

- a. X-linked dominant
- b. X-linked recessive
- c. Mitochondrial
- d. Autosomal dominant
- e. Autosomal recessive

55. A 24-year-old male decided to run a marathon after being untrained for a long period. The next day he visits his doctor with a chief complaint of severe pain in his thighs and shins. Which of the following is the most likely cause of this condition?

- a. Adenosine diphosphate accumulation in the muscles
- b. ---
- c. Muscle proteins breakdown
- d. Creatinine accumulation in the muscles
- e. Lactic acid accumulation in the muscles

56. Під час аутопсії тіла чоловіка віком 47 років виявили виразку по задній стінці шлунка діаметром 3 см, яка проникає у прилеглу до кишki тканину підшлункової залози. У ділянці виразки у підшлунковій залозі та в оточуючій жировій тканині множинні стеатонекрози. Яке ускладнення виразкової хвороби виникло у чоловіка?

- a. Флегмона стінки шлунка
- b. Пенетрація
- c. Перфорація
- d. Малігнізація
- e. Стеноз

57. A 56-year-old woman complains of pain in the small joints of her hands and feet. She has been experiencing these symptoms for the last 12 years. Examination of her hands detects a subluxation of the metacarpophalangeal joints with fingers bent outwards ("walrus flippers"). There are high molecular weight immune complexes in the patient's blood. What diagnosis can be made in this case?

- a. Rheumatoid arthritis
- b. Rheumatic polyarthritis
- c. Systemic lupus erythematosus
- d. Dermatomyositis
- e. Gouty arthritis

58. A 49-year-old woman developed leg edema after she had been standing for a long time. What is the likely cause of leg edema in this case?

- a. Increased oncotic blood plasma pressure
- b. Decreased hydrostatic blood pressure in the arteries
- c. Increased arterial blood pressure
- d. Increased hydrostatic blood pressure in the veins
- e. Decreased hydrostatic blood pressure in the veins

59. A patient was prescribed an adrenomimetic drug to stop an attack of bronchial asthma. Select this drug from the list.

- a. Cerucal (Metoclopramide)
- b. Rheopolyglucin (Dextran)

c. Nitrosorbide (Isosorbide dinitrate)

d. Salbutamol

e. Asparcam (Potassium and magnesium aspartate)

60. A 64-year-old man presents with a tremor in his legs and arms. He says he has had the tremor for <<many years>>, but it has worsened in the last year. The tremor is more prominent at rest and nearly disappears on movement. His daughter mentions that his movements have become slower. The patient is afebrile and vital signs are within normal limits. On physical examination, the patient is hunched over and his face is expressionless throughout examination. There is a <<pill-rolling>> resting tremor that is accentuated when the patient is asked to clench the contralateral hand and alleviated by finger-nose testing. When asked to walk across the room, the patient has difficulty taking the first step, has a stooped posture and takes short rapid shuffling steps. A doctor initiates pharmacotherapy and the drug of first line, levodopa, is prescribed. Which of the following is the most likely mechanism of action of this drug?

a. Stimulation of dopamine production

b. Cholinesterase inhibition

c. ---

d. Activation of M2-cholinergic receptors

e. Inhibition of M2-cholinergic receptors

61. After delivery of a child by pregnant woman, the midwife notices a defect in external genitalia of a newborn. The woman only had one prenatal ultrasound that reported a male fetus. On physical exam, the neonatologists notices a short, broad penis with an orifice in its dorsal aspect, both testicles are present in the scrotum. Which of the following is the most likely congenital abnormality?

a. Paraphimosis

b. Hypospadias

c. Epispadias

d. Phimosis

e. Ovotesticular disorder of sex development

62. A patient complains of palpitation after stress. The pulse is 104 bpm, P-Q=0,12 seconds, there are no changes of QRS complex. What type of arrhythmia does the patient have?

a. Ciliary arrhythmia

b. Extrasystole

c. Sinus arrhythmia

d. Sinus tachycardia

e. Sinus bradycardia

63. An increase in the circulating blood volume under the influence of aldosterone and antidiuretic hormone leads to the activation of secretion of a certain substance. What substance is it?

a. Melatonin

b. Angiotensin II

c. Atrial natriuretic peptide

d. Renin

e. Angiotensinogen

64. A patient complains of solar radiation intolerance. He has burns on his skin and vision loss. He was provisionally diagnosed with albinism. What amino acid metabolism is disturbed in this patient?

a. Tryptophan

b. Tyrosine

c. Lysine

d. Proline

e. Alanine

65. A patient with frequent hemorrhages from the internal organs and mucous membranes has proline and lysine in the composition of collagen fibers. Their hydroxylation is impaired because of the following vitamin deficiency:

a. Vitamin K

- b. Vitamin A
- c. Vitamin E
- d. Vitamin C**
- e. Thiamine

66. Який із нижчепереліканих препаратів під час закрапування в очі викликає розширення зіниці та параліч акомодації?

- a. Фурацилін
- b. Атропіну сульфату**
- c. Галантаміну гідробромід
- d. Пілокарпіну гідрохлориду
- e. Прозерін

67. A patient with pleurisy has a foul-smelling fluid, containing biogenic amines and gases, in the pleural cavity. What type of inflammation is observed in this case?

- a. Purulent
- b. Putrefactive
- c. Catarrhal
- d. Fibrinous
- e. Alterative

68. A patient was hospitalized with the provisional diagnosis of coronavirus infection. To diagnose the disease, a serological reaction was performed. This reaction is based on the interaction between an antigen and an antibody that is chemically linked to peroxidase or alkaline phosphatase. What serological reaction was used in this case?

- a. Radioimmunological method
- b. Complement fixation test
- c. Immobilization test
- d. Enzyme-linked immunosorbent assay (ELISA)**
- e. Immunofluorescence assay

69. A 65-year-old man with liver cirrhosis developed a significant decrease in blood pressure. What mechanism can be the cause of arterial hypotension in this case?

- a. Disturbed production of bile acids in the liver
- b. Reduced synthesis of transport proteins in the liver
- c. Disturbed antitoxic function of the liver
- d. Reduced angiotensinogen synthesis in the liver**
- e. Increased urea synthesis in the liver

70. A patient is diagnosed with acute morphine hydrochloride intoxication. Prescribe an oxidizing agent for gastric lavage:

- a. Chlorhexidine (bi)gluconate
- b. Cerigel
- c. Chloramine
- d. Sulfocamphocainum (Procaine + Sulfocamphoric acid)**
- e. Potassium permanganate

71. During a pathological childbirth, separation of the pubic bones occurred in the woman. What type of bone junction was damaged in this case?

- a. Synostosis
- b. Diarthrosis
- c. Symphysis**
- d. Syndesmosis
- e. Synchondrosis

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

- a. Furosemide**
- b. Spironolactone

- c. Acetazolamide (Diacarb)
- d. Hydrochlorothiazide (Dichlothiazidum)
- e. Triamterene

73. Liver diseases with insufficient bile supply to the intestine lead to worsening of hemocoagulation.

How can this phenomenon be explained?

- a. Thrombocytopenia
- b. Leukopenia
- c. Vitamin K deficiency
- d. Erythropenia
- e. Iron deficiency

74. One of the tunics of a hollow organ contains nucleated anastomosing fibers. The fibers consist of cells that form intercalated discs in the contact areas. What tissue forms this tunic of an organ?

- a. Dense irregular connective tissue
- b. Cross-striated cardiac muscle
- c. Loose fibrous connective tissue
- d. Cross-striated skeletal muscle
- e. Smooth muscle

75. To determine the functional activity of blood corpuscles, a suspension of microorganisms was introduced into the test tube with packed white cells. In this case, the cytoplasm of some cells will contain phagocytized microorganisms. Which of the following cell types will show phagocytized microorganisms?

- a. Lymphocytes and eosinophils
- b. Neutrophils and monocytes
- c. Monocytes and lymphocytes
- d. Lymphocytes and neutrophils
- e. Lymphocytes and basocytes

76. A 24-year-old man undergoes surgery and during the operation, an organ is excised and sent for histological evaluation. A light microscopic examination reveals the organ encased by thin connective tissue capsule that enters the substance of the lobes to further subdivide the organ into irregular lobular units. Each lobule contains a cluster of follicles filled with colloid. Follicular epithelium consists of low columnar, cuboidal or squamous cells depending on the level of activity of the follicle. Which of the following organs does this tissue most likely belong to?

- a. Parathyroid gland
- b. Thymus
- c. Pancreas
- d. Parotid gland
- e. Thyroid gland

77. The Wasserman reaction is markedly positive (++++) in a 30-year-old man. What infectious disease is diagnosed using the Wasserman reaction?

- a. Syphilis
- b. Influenza
- c. Tuberculosis
- d. Brucellosis
- e. Poliomyelitis

78. A histological specimen of a woman's ovary shows a round formation, consisting of large glandular cells that contain lutein pigment. In the center of this structure, there is a small scar made of connective tissue. Name this formation:

- a. Atretic body
- b. Mature follicle
- c. Secondary follicle
- d. Corpus luteum
- e. Corpus albicans

79. A blood smear of an allergic person contains a large number of round cells with a segmented nucleus and large bright pink granules in the cytoplasm. Name these blood cells.

- a. Erythrocytes
- b. Lymphocytes
- c. Neutrophilic granulocytes
- d. Basophilic granulocytes
- e. Eosinophilic granulocytes

80. During the ascent into the mountains, a climber at the altitude of 6000 meters above the sea level developed euphoria, inadequate assessment of the situation, and hallucinations. What is the leading cause in the development of these signs of mountain sickness?

- a. Reduced partial pressure of oxygen in the air
- b. Physical exertion
- c. Air expansion in the frontal sinuses
- d. Snow ophthalmia
- e. Decreased atmospheric pressure

81. Autopsy of a 47-year-old miner's body, who worked down in the shaft for 10 years, reveals bands of a whitish fibrous tissue and nodules 0.2-0.3 cm in diameter in his lungs. Histology detects in the nodules a small amount of brownish dust and concentric proliferation of a cell-poor connective tissue with marked hyalinosis. What type of pneumoconiosis can be suspected in this case?

- a. Berylliosis
- b. Asbestosis
- c. Talcosis
- d. Siderosis
- e. Silicosis

82. A 65-year-old patient with a history of coronary artery disease presents to the doctor's office complaining of dizziness and sudden onset of a <<bluish discoloration>> of his skin. Physical examination reveals cyanotic patient. His blood pressure is 100/50 mm Hg, heart rate --- 110/min., respiratory rate --- 14/min. Laboratory testing is significant for methemoglobinemia. Which of the following medications did this patient most likely misuse?

- a. Calcium channel blockers
- b.  $\alpha$ -adrenoreceptor antagonists
- c. Smooth muscle relaxant
- d. Adenosine
- e. Nitrovasodilator

83. A blood drop has been put into a test tube with 0.3% solution of NaCl. What will happen to erythrocytes?

- a. Shrinkage
- b. Any changes will be observed
- c. Mechanical haemolysis
- d. Osmotic haemolysis
- e. Biological haemolysis

84. A male neonate born to a 24-year-old, who was pregnant for the first time, had jaundice at 8 hours of life. The neonate's red blood cell type was A+, while the mother's RBC type was O+. Laboratory studies revealed elevated titer of mother's anti-A antibody, normal erythrocyte glucose-6-phosphate and negative sickle cell test. The infant's hemoglobin was 106 g/L. Which of the following is the most likely cause of infant's jaundice?

- a. Rh incompatibility
- b. Sickle cell disease
- c. Glucose-6-phosphate dehydrogenase (G6PD) deficiency
- d. Decrease in hemoglobin level
- e. Hyperbilirubinemia

85. У жінки віком 45 років на шкірі обличчя з'явилося пігментне утворення у вигляді вузлика.

Мікроскопічно в біоптаті визначаються поля веретеноподібних і поліморфних клітин, що містять бурий пігмент, з великою кількістю мітоzів. Який патологічний стан виник у пацієнтки?

- a. Меланома
- b. Рак
- c. Папілома
- d. Пігментний невус
- e. Дерматофіброма

86. A team of medical students is performing research on phases of cell cycle. During one of the mitotic phases the cell is nearly done dividing, the chromosomes decondense and two nuclei begin to form around them. Which of the following phases most likely takes place in the cell?

- a. ---
- b. Prophase
- c. Anaphase
- d. Metaphase
- e. Telophase

87. A histological specimen demonstrates a parenchymal organ, the structural and functional unit of which is a follicle. The wall of the follicle is formed by cuboidal cells. The cavity of the follicle is filled with a colloid. What organ is being demonstrated in the specimen?

- a. Ovary
- b. Pituitary gland
- c. Testicle
- d. Salivary gland
- e. Thyroid gland

88. During the surgery on the small intestine the surgeon revealed an area of the mucous membrane with a single longitudinal fold among the circular folds. Which portion of the small intestine is this structure typical for?

- a. Pars ascendens duodeni
- b. Pars horizontalis duodeni
- c. jejunum
- d. Distal ileum
- e. Pars descendens duodeni

89. A 35-year-old woman has come to her physician with chief complaint of elevated blood pressure up to 180/100 mm Hg. She currently does not take any medication. During the physical examination, her blood pressure is 140/80 mm Hg, heart rate is 65/min. and temperature is 36.8°C) She has a "moon face", hirsutism, centripetal obesity, and striae on the skin with atrophy over the abdomen and thighs. Which of the following is the most likely cause of this patient's condition?

- a. Hypothyroidism
- b. Cortisol-secreting adrenal adenoma
- c. Hyperthyroidism
- d. Ovarian insufficiency
- e. Pancreatic islet cells hyperfunction

90. Які механізми регуляції зумовлюють збільшення частоти серцевих скорочень під час зміни положення тіла з горизонтального у вертикальне?

- a. Катехоламіни
- b. Симпатичні рефлекси і катехоламіни
- c. Умовні симпатичні рефлекси
- d. Умовні та безумовні симпатичні рефлекси
- e. Безумовні симпатичні рефлекси

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

- a. Pyruvate dehydrogenase complex
- b. Glutathione reductase

- c. Glutathione peroxidase
- d. Microsomal oxidation
- e. Methemoglobin reductase

92. A 37-year-old man is admitted to hospital with mental confusion and disorientation. His wife reports he became more irritable and forgetful in the past year. In addition, she notes that he became a vegan a year ago, and currently, his diet consists of starchy foods like potatoes, corn, and leafy vegetables. GI symptoms include anorexia, diarrhea and vomiting. He has glossitis and skin lesions that appear as vesicles over the extremities. Eczema-like lesions around the mouth, as well as desquamation and roughened skin over the hands are also present. Neurologic examination reveals symmetrical hypesthesia for all types of sensation in both upper and lower extremities in a <>gloves and socks>> distribution. Deficiency in diet of which of the following amino acids is the most likely cause of this condition?

- a. Threonine
- b. Histidine
- c. Tryptophan
- d. Arginine
- e. Lysine

93. At the post-mortem examination the stomach of a patient with renal failure was found to have a yellow-brown coating on the thickened mucosa. The coating was firmly adhering to its surface and had significant thickness. Microscopy revealed congestion and necrosis of mucosal and submucosal layers, fibrin presence. What is the most likely diagnosis?

- a. Corrosive gastritis
- b. Esogastritis
- c. Gastric abscess
- d. Croupous gastritis
- e. Fibrinous gastritis

94. A patient has been hospitalized into the infectious diseases department with complaints of recurrent episodes of diarrhea and vomiting, pain in the leg muscles, weakness, and dizziness. After the examination, the doctor provisionally diagnosed the patient with cholera. What studies must be performed with the material obtained from the patient to make the express diagnosis?

- a. Bacteriology
- b. Serology
- c. Direct and indirect immunofluorescence
- d. Agglutination reaction
- e. Biological method

95. A poisoning caused by sulema (mercury dichloride) has occurred at a factory. Two days later, the person, who had suffered from the sulema exposure, developed the 24-hour diuresis of 620 mL, headache, vomiting, convulsions, and dyspnea. What diagnosis can be made in this case?

- a. Glomerulonephritis
- b. Acute renal failure
- c. Chronic renal failure
- d. Uremic coma
- e. Pyelonephritis

96. RNA of human immunodeficiency virus (HIV) has penetrated the leukocyte and stimulated the cell to synthesize viral DNA using the reverse transcriptase enzyme. Name this process:

- a. Operon depression
- b. Convariant replication
- c. Reverse transcription
- d. Reverse translation
- e. Operon repression

97. Five hours after eating seafood, a 22-year-old woman developed small itchy papules on the skin of her torso and distal parts of her limbs. The papules were partially merging with each other. 24 hours

later, the rash spontaneously disappeared. What mechanism of hypersensitivity underlies these changes?

- a. Immune complex-mediated hypersensitivity
- b. Antibody-dependent cell-mediated cytotoxicity
- c. Cell-mediated cytotoxicity
- d. Atopy (local anaphylaxis)**
- e. Systemic anaphylaxis

98. Під час огляду новонародженої дитини лікар діагностував вроджену м'язову криовошию.

Який м'яз шиї уражений?

- a. M. platysma
- b. M. sternocleidomastoideus**
- c. M. mylohyoideus
- d. M. omohyoideus
- e. M. sternohyoideus

99. A patient complains of acute pain attacks in the right lumbar region. During examination the 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 inguinalis
- b. Linea semilunaris
- c. Linea transversa
- d. Linea arcuata
- e. Linea terminalis**

100. A 50-year-old man presents to the office with the complaint of pain in his left great toe. The pain started 2 days ago and has been progressively getting worse to the point that it is difficult to walk even a few steps. He adds that his left big toe is swollen and hot to the touch. He normally drinks 2-3 glasses of red wine each day. Physical examination is notable for an overweight gentleman (BMI of 35) in moderate pain, with an erythematous, swollen, and exquisitely tender left great toe. A complete blood count shows: hemoglobin --- 120 g/L, hematocrit --- 0.45, platelets ---  $160 \cdot 10^9$ /L, leukocytes ---  $8.0 \cdot 10^9$ /L, segmented neutrophils --- 65%, lymphocytes --- 25%, eosinophils --- 3%, and monocytes --- 7%. Synovial fluid analysis shows cell count of 15,000 cells/mm<sup>3</sup> (80% neutrophils), negatively birefringent crystals present. Elevated concentration of which of the following compounds is the most common laboratory finding in these patients?

- a. Uric acid**
- b. Cystine
- c. Urea
- d. Bilirubin
- e. Cholesterol

101. В яку анатомічну ділянку через решітчасту кістку відкривається отвір лобової пазухи?

- a. Верхній носовий хід
- b. Середній носовий хід**
- c. Хоани
- d. Підскронева ямка
- e. Нижній носовий хід

102. A 50-year-old patient has been hospitalized with signs of a hypertensive crisis. What is associated with a sharp increase in the blood pressure?

- a. Endothelial desquamation
- b. Hyalinosis of arterioles
- c. Endothelial dystrophy
- d. Necrosis of arterioles
- e. Spasm of arterioles**

103. Цитоскелет клітин складається з мікротрубочок, проміжних філаментів та мікрофіламентів. Який білок у своєму складі містять мікротрубочки?

- a. Глобулін
- b. Тубулін
- c. F-актин
- d. Альбумін
- e. G-актин

104. During the healing of a wound, a scar made of connective tissue develops in the area of the tissue defect. What cells cause this process?

- a. Melanocytes
- b. Mast cells
- c. Fibrocytes
- d. Fibroblasts
- e. Macrophages

105. Autopsy of the body of a 44-year-old man, who died of cardiopulmonary failure, revealed pneumosclerosis, pulmonary emphysema, and hypertrophy of the right ventricle of the heart. Multiple mostly subpleural foci up to 1 cm in diameter are observed in both lungs. Histologically, in the center of the foci there is a zone of necrosis, while on their periphery a border consisting of epithelioid cells and lymphocytes with addition of macrophages and plasma cells is observed. Langhans giant cells are present. A small number of blood capillaries can be detected on the periphery of the lesion foci. What disease is it?

- a. Silicosis
- b. Syphilis
- c. Sarcoidosis
- d. Pulmonary actinomycosis
- e. Hematogenous tuberculosis

106. Blood testing of a 45-year-old man, who had gastrectomy three years ago, shows the following: erythrocyte count ---  $2.0 \cdot 10^{12}/L$ , Hb --- 85 g/L, color index --- 1.27. These changes in erythropoiesis were caused by problems with absorption of a certain vitamin. Name this vitamin.

- a. C
- b.  $B_{12}$
- c. P
- d. A
- e.  $B_6$

107. During the treatment of ciliary arrhythmia, a patient developed bronchoobstructive syndrome --- problematic breathing and cough. What antiarrhythmic drug can cause such a complication?

- a. Ajmaline
- b. Novocainamide (Procainamide)
- c. Verapamil
- d. Anaprilin (Propranolol)
- e. Nifedipine

108. A 38-year-old woman presents for evaluation to a clinic with painful ulceration in her right breast for the last 2 months. She is worried because the ulcer is increasing in size. On further questioning, she says that she has a discharge from her right nipple as well. Her mother and aunt died of breast cancer at 60 and 54 years of age, respectively. On examination, the right breast is enlarged and firm, with thickened skin, diffuse erythema, edema, and an ulcer measuring 3x3 cm. Mammography is ordered that shows a mass with a large area of calcifications, parenchymal distortion, and extensive soft tissue and trabecular thickening in the affected breast. The patient subsequently undergoes core needle and full-thickness skin punch biopsies. The pathology report states a clear dermal lymphatic invasion by tumor cells. Which of the following is the most common site for metastatic disease in this pathology?

- a. Preaortic, tracheobronchial lymph nodes
- b. Parasternal, tracheobronchial lymph nodes
- c. Deep anterior cervical, abdominal lymph nodes
- d. Axillary, supraclavicular lymph nodes

e. Deep lateral cervical, superior diaphragmatic lymph nodes

109. A 75-year-old man was diagnosed with rectal cancer. Into what regional lymph nodes can the metastases spread in this case?

- a. Into the thoracic lymphatic duct
- b. Into the perivesical lymph nodes
- c. Into the lumbar lymph nodes

d. Into the inferior mesenteric lymph nodes

e. Into the superior mesenteric lymph nodes

110. Infectious diseases are treated with antibiotics (streptomycin, erythromycin, chloramphenicol).

They inhibit the following stage of protein synthesis:

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

111. A 40-year-old prisoner died of tuberculosis. Autopsy of the body revealed deformation and diminishing of both lung apices; in the both upper lobes there are multiple cavities with dense walls 2–3 mm thick; in the lower lung lobes there are disseminated foci of caseous necrosis varying from 5 mm to 2 cm in diameter. Diagnose the type of tuberculosis:

- a. Hematogenous macrofocal \\ pulmonary tuberculosis
- b. Secondary cirrhotic tuberculosis
- c. Primary tuberculosis, primary affect development
- d. Secondary fibro-cavitory \\ tuberculosis

e. Secondary fibrous-focal \\ tuberculosis

112. A patient diagnosed with chronic bronchitis underwent a biopsy of the main bronchus. The patient has a 30-year-long history of smoking. Histology of the biopsy material revealed stratified squamous epithelium. What pathological process in the main bronchus does it indicate?

- a. Physiological regeneration
- b. Dysplasia
- c. Metaplasia
- d. Hyperplasia
- e. Reparative regeneration

113. A patient has been diagnosed with a myocardial infarction. His blood was tested for the activity of cardiospecific enzymes. Which one among the detected enzymes has three isoforms?

- a. Lactate dehydrogenase
- b. Pyruvate kinase
- c. Aspartate transaminase
- d. Alanine transaminase
- e. Creatine kinase

114. A 12-year-old patient was found to have blood serum cholesterol at the rate of 25 mmol/l. The boy has a history of hereditary familial hypercholesterolemia, which is caused by the impaired synthesis of the following protein receptors:

- a. Chylomicrons
- b. Intermediate density lipoproteins
- c. Low density lipoproteins
- d. High density lipoproteins
- e. Very low density lipoproteins

115. Zolicons (monoclonal antibodies) were used to determine the person's blood group according to the ABO system. Erythrocyte agglutination did not occur with any of the zolicons. What blood type does this person have?

- a. B (III)
- b. A (II)

c. 0 (I)

d. AB (IV)

e. ---

116. A woman, who was undergoing treatment for insomnia, was found unconscious. Her respiration is inhibited, she is in a collaptoid state and presents with muscle hypotonia and absence of reflexes. Empty medicine packages were found at the site of the accident. What medicine could have caused such a condition in the patient?

a. Picamilon

b. Nialamide

c. Promedol (Trimeperidine)

**d. Phenobarbital**

e. Eleutherococcus tincture

117. Increased levels of angiotensin II have been detected in the blood of a patient with a hypertensive crisis. The pressor effect of angiotensin is associated with the:

a. Stimulation of vasopressin production

b. Hyperproduction of prostaglandins

c. Activation of biogenic amine synthesis

**d. Contraction of arteriolar muscles**

e. Activation of the kallikrein-kinin system

118. Oxidation of carbohydrates and lipids produces a large amount of energy, the main portion of which is generated in the process of acetyl-CoA oxidation. How many ATP molecules are formed as a result of complete oxidation of one acetyl-CoA molecule?

a. 24

b. 8

c. 12

d. 36

e. 38

119. Due to blood loss the circulating blood volume of a patient decreased. How will it affect the blood pressure in this patient?

a. Only systolic pressure will decrease

b. Diastolic pressure will decrease, \ while systolic will increase

**c. Systolic and diastolic pressure will decrease**

d. Systolic pressure will decrease, \ while diastolic will increase

e. Only diastolic pressure will \ decrease

120. Активність якого ферменту підвищується в крові пацієнта під час інфаркту міокарда?

**a. Креатинфосфокінази MB**

b. Карбамоїлфосфатсінтетази

c. Лужної фосфатази

d. Креатинфосфокінази ММ

e. Креатинфосфокінази ВВ

121. Karyotyping detected 47 chromosomes (3 copies of chromosome 13) in a newborn child with multiple defects of the skull, limbs, and internal organs. What diagnosis can be made in this case?

a. Turner syndrome

b. Edwards syndrome

c. Klinefelter syndrome

d. Down syndrome

**e. Patau syndrome**

122. During a blood transfusion, intravascular hemolysis of erythrocytes started developing in the patient. What type of hypersensitivity has developed in this patient?

**a. Type II hypersensitivity (antibody-dependent)**

b. Type IV hypersensitivity (cell-mediated cytotoxicity)

c. Type I hypersensitivity (anaphylactic)

- d. Type III hypersensitivity (immune complex)
- e. Type V hypersensitivity (granulomatosis)

123. The key reaction of fatty acid synthesis is production of malonyl-CoA) What metabolite is the source of malonyl-CoA synthesis?

- a. Acyl-CoA
- b. Malonate
- c. Succinyl-CoA
- d. Citrate
- e. Acetyl-CoA

124. Histones are small basic proteins, bound to DNA in chromatin. They contain numerous positively charged amino acid residues, which ensures their strong bond with the acidic groups of DNA. Name the most common amino acids in histones.

- a. Glutamic acid, glutamine
- b. Aspartic acid, asparagine
- c. Serine, methionine
- d. Lysine, arginine
- e. Cystine, cysteine

125. A 58-year-old woman with essential hypertension was prescribed amlodipine by her doctor. What group of drugs does it belong to?

- a. Potassium channel blockers
- b. Calcium channel blockers
- c. Sodium channel blockers
- d. Potassium channel activators
- e. Beta blockers

126. У складі кісткової тканини виявлено великі клітини, що містять численні лізосоми, багато ядер, гофровану зону. Яку назву мають ці клітини?

- a. Остеобласти
- b. Остеоцити
- c. Остеокласти
- d. Мезенхімні клітини
- e. Напівстовбурові остеогенні клітини

127. При огляді жінки віком 36 років лікар застосував урологічні інструменти. Через деякий час у пацієнтки з уретри почала виділятися серозна рідина, у якій виявлені грушоподібні клітини з джгутиками, ундулюючою мемброною та аксостилем. Укажіть найімовірнішого збудника хвороби за вказаною морфологією .

- a. Trichomonas vaginalis
- b. Lamblia intestinalis
- c. Trichomonas tenax
- d. Trichomonas hominis
- e. Leishmania tropica

128. Examination of a patient detected accumulation of sphingomyelins in the cell lysosomes of the patient's liver, spleen, lungs, bone marrow, and brain, caused by the lack of sphingomyelinase enzyme. What pathology is most likely in this patient?

- a. Sandhoff disease
- b. Niemann-Pick disease
- c. Tay-Sachs disease
- d. Gaucher disease
- e. Krabbe disease

129. Autopsy of the body of a 14-year-old child who died of pneumonia revealed the following: multiple punctate and spotty hemorrhages in the skin, mucosa, and serous membranes; an enlarged flaccid spleen that is red on section and yields only a small amount of material when scraped; enlarged pale gray mediastinal and retroperitoneal lymph nodes with a slightly pinkish tint on the

cross-section; raspberry-red bone marrow in flat and tubular bones. What disease is indicated by the described changes?

- a. Acute myeloblastic leukemia
- b. Lymphogranulomatosis
- c. Acute lymphoblastic leukemia
- d. Chronic lymphoid leukemia
- e. Chronic myeloid leukemia

130. Яка група організмів має нуклеїди - кільцеві молекули ДНК, що формують хромосоми простої будови (відсутні гістони)?

- a. Гриби
- b. Віруси
- c. Бактеріофаги
- d. Найпростіші
- e. Бактерії

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

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

132. In the hematology unit a patient with leukemia was prescribed 5-Fluorouracil. What is the mechanism of action of this drug?

- a. Stimulates DNase
- b. Catalyzes replication
- c. Inhibits transcription
- d. Inhibits DNA synthesis
- e. Inhibits translation

133. A worker was hospitalized with the bleeding, caused by an injury to the shoulder. Five days later, an increased concentration of certain blood cells will be observed in the patient's blood. Name these cells.

- a. Reticulocytes
- b. Megaloblasts
- c. Lymphoblasts
- d. Erythroblasts
- e. Megalocytes

134. A patient with acute appendicitis has been hospitalized into the surgical department. An appendectomy under local anesthesia was initially recommended to the patient. However, it was later discovered that the patient had a history of frequent allergic reactions to medicines. Select from the list the drug that would be the optimal choice for infiltration anesthesia in this case.

- a. Cocaine
- b. Xycaine (Lidocaine)
- c. Anesthesine (Benzocaine)
- d. Novocaine (Procaine)
- e. Dicaine (Tetracaine)

135. A man has gradually developed a plaque on the skin of his face with necrosis and an ulcer in its center. Pathohistology of the biopsy material reveals proliferation of atypical epithelial cells with a large number of pathological mitoses. What disease can be characterized by such clinical and laboratory findings?

- a. Trophic ulcer
- b. Papilloma
- c. Sarcoma

- d. Skin cancer
- e. Fibroma

136. Найважливішим медіатором центральної нервоної системи є гамма-аміномасляна кислота. При декарбоксилуванні якої з амінокислот утворюється цей біогенний амін?

- a. Лізин
- b. Триптофан
- c. Тирозин
- d. Гістидин
- e. Глутамат

137. Six hours have passed since the development of an acute myocardial infarction in the patient. During autopsy of the body, staining was used to identify the area of infarction. What was used to detect the area of necrosis?

- a. Toluidine blue
- b. Congo red
- c. Picrofuchsin
- d. Tetrazolium salts
- e. Methyl violet

138. A woman was hospitalized because of posterior wall myocardial infarction in the left ventricle. In this case, the circulation will be impaired in the following artery:

- a. Thebesian vessels
- b. Left coronary artery
- c. Anterior interventricular artery
- d. Left circumflex artery
- e. Posterior interventricular artery

139. У жінки віком 28 років під час лабораторного обстеження в крові виявлено гіперхромію еритроцитів, мегалоцити і мегалобласти. Який вид анемії у пацієнтки?

- a. Постгеморагічну
- b. В12-фолієводефіцитну
- c. Гемолітичну
- d. Гіпопластичну
- e. Залізодефіцитну

140. A surgeon suspects inflammation of the Meckel's diverticulum in a 10-year-old child. This condition requires a surgical intervention. What part of the intestine must be inspected to find the diverticulum?

- a. Ascending colon
- b. 0.5 meters of jejunum, starting from the ligament of Treitz
- c. Descending colon
- d. 20 cm of the ileum, starting from the ileocecal angle
- e. 1 meter of the ileum, starting from the place of its confluence with the large intestine

141. In cases of fatty infiltration of the liver, the synthesis of phospholipids becomes disrupted. In such cases, the patients are advised to eat more cottage cheese, because it contains a certain substance that can promote the methylation process in the synthesis of phospholipids. Name this substance.

- a. Calcium
- b. Methionine
- c. Glycerine
- d. Cysteine
- e. Ethanolamine

142. A 70-year-old-man has suffered a femoral fracture as a result of a fall. What is the most common fracture site in this bone at this age?

- a. Middle part
- b. Condyles

c. Neck

d. Upper third

e. Lower third

143. A 36-year-old man developed angina pectoris attacks after a case of staphylococcal sepsis. In the left coronary artery, coronary angiography revealed parietal thrombosis without signs of atherosclerosis. In this case, the thrombus formation started because of the damage to the vascular endothelium and the release of:

a. Adenosine triphosphate

b. Serotonin

c. Platelet-activating factor

d. Phospholipase A2

e. Adenosine diphosphate

144. A smear prepared from the duodenal content of a patient with maldigestion contained protozoa 10-18  $\mu\text{m}$  in size, with pear-shaped body, 4 pairs of flagella, and two symmetrically positioned nuclei in the widened front part of the body. What type of protozoa is the most likely in this case?

a. Balantidium

b. Entamoeba coli

c. Entamoeba histolytica

d. Lamblia

e. Trichomonad

145. A mother of a 4-month-old male infant brought him to pediatrician with complaints of food rejection and weight loss. He started having trouble latching onto his bottle. He has also become extremely lethargic. Examination reveals diminished muscle tone in all four limbs, and hepatosplenomegaly. An ophthalmoscopic exam reveals macular cherry red spots. During the next few weeks, hepatosplenomegaly progresses, the boy fails to thrive, and he continues to reject food. Chest X-ray shows a reticulonodular pattern and calcified nodules. Biopsy of the liver shows foamy histiocytes. A Niemann-Pick disease is suspected. Which of the following is the most likely deficient enzyme in this patient?

a. Sphingomyelinase

b. Phenylalanine-hydroxylase

c. Galactocerebrosidase

d. Glucocerebrosidase

e. Glucose-6-phosphatase

146. Autopsy of the body of a 72-year-old woman with rheumatoid arthritis, who died of uremia, revealed enlarged dense pale gray kidneys with shiny sebaceous surface on section. What pathology can be suspected, based on the revealed changes?

a. Chronic glomerulonephritis

b. Chronic pyelonephritis

c. Contracted granular kidneys

d. Atherosclerotic nephrosclerosis

e. Renal amyloidosis

147. After bilateral adrenalectomy performed on a dog, the animal developed muscle weakness, adynamia, low body temperature, and hypoglycemia. What other sign is likely to be observed in case of adrenal insufficiency?

a. Increased resistance to bacteria and toxins

b. Increased sodium and chloride levels in the blood serum

c. Arterial hypotension

d. Increased glycogen synthesis

e. Lymphopenia

148. A 25-year-old man presents to his physician with a 1-week history of fever, sore throat, nausea, and fatigue. His vital signs include: temperature --- 38.5°C, pulse --- 72/min., blood pressure --- 120/70 mm Hg, and respiratory rate --- 17/min. On physical examination, he has bilateral posterior cervical

lymphadenopathy, exudates over the palatine tonsil walls with soft palate petechiae, an erythematous macular rash on the trunk and arms, and mild hepatosplenomegaly. This patient most likely has infectious mononucleosis. Which of the following would be the most appropriate diagnostic laboratory test?

- a. Herpes simplex virus isolation
- b. A 4-fold increase in anti-EBV titers
- c. Positive serum IgM antibodies for Herpes simplex virus
- d. A detection of Cytomegalovirus (CMV) antibodies
- e. Positive serum IgM antibodies for Epstein-Barr virus

149. A 78-year-old woman presents to the emergency department for fever and generalized malaise. Her symptoms began several days ago, when she noticed pain with urination and mild blood in her urine. Earlier this morning she experienced chills, flank pain and mild nausea. Her temperature is 38.7°C, blood pressure is 140/80 mm Hg, heart rate is 98/min. Later she dies of unknown cause. At autopsy, her kidney is swollen with punctate abscesses that outlined by a thin red margin (signs of marginal vascular dilation). Microscopic observation reveals a large number of neutrophils. Which of the following is the most likely diagnosis?

- a. Amyloidosis
- b. Acute glomerulonephritis
- c. Polycystic kidney disease
- d. Acute pyelonephritis
- e. Nephrolithiasis

150. A 45-year-old woman comes to her physician with complaints of excessive fatigue and weakness. She says that these symptoms have been present for the past month. On further questioning, she admits having lost 3 kilograms in the last 2 weeks. On physical examination, she is a tired-appearing thin woman. Hyperpigmentation is present over many areas of her body, most prominently over the face, neck and back of hands (areas exposed to light). Increased production of which of the following hormones is the most likely cause of hyperpigmentation in this patient?

- a. Thyroid-stimulating hormone (TSH)
- b. Gonadotropins
- c. Growth hormone (GH)
- d. Melanocyte-stimulating hormone (MSH)
- e.  $\beta$ -Lipotropin

151. During surgical intervention, an organ is removed from a 34-year-old patient and sent for histologic evaluation. The pathologist examines the slide. The organ is encased in a connective tissue capsule that extends septae into the organ's substance, which is portioned into cortex and medulla. It is richly vascularized and capsular blood vessels penetrate along with the septae. The medulla is fairly homogenous and consists of chromaffin cells, but in the cortex, three concentric zones can be distinguished. Which of the following is the most likely organ?

- a. Thyroid gland
- b. Lymph node
- c. Kidney
- d. Thymus
- e. Adrenal gland

152. During local anesthetization the patient has gone into anaphylactic shock. What drug must be administered to the patient?

- a. Atropine sulfate
- b. Propranolol
- c. Epinephrine hydrochloride
- d. Diazepam
- e. Nitroglycerin

153. High molecular weight proteins were detected in the patient's urine. What is likely to be disturbed in the patient, causing this disorder?

- a. Renal countercurrent system

- b. Protein reabsorption
- c. Value of effective filtration pressure
- d. Secretion processes
- e. Renal filter permeability

154. In a maternity hospital, due to a mistake made by a nurse, it became necessary to determine the biological parents of the newborn babies. What must be analyzed to determine the child's parentage?

- a. Nuclear DNA
- b. Mitochondrial DNA
- c. Messenger RNA
- d. Ribosomal RNA
- e. Small nuclear RNA

155. A patient with liver cirrhosis has persistent arterial hypotension (blood pressure - 90/50 mm Hg). What causes the decrease in blood pressure in such a liver pathology?

- a. Decreased angiotensinogen synthesis
- b. Increased reflex effect of the receptor zone in the aortic arch
- c. Activation of the kinin-kallikrein system
- d. Increased natriuretic hormone synthesis
- e. Excessive vasopressin inactivation

156. In some diseases of the nervous system, damage with chromatolysis phenomena can be observed in the neurocytes. What intracellular metabolic processes become disturbed in the neurons?

- a. Synthesis of carbohydrates
- b. Keratohyalin folding
- c. Synthesis of protein
- d. Synthesis of glycolipids
- e. Synthesis of lipids

157. A geneticist examined a pregnant woman and determined that she has monozygotic twins. What process has resulted in the development of twins?

- a. Fragmentation
- b. Polyembryony
- c. Schizogony
- d. Budding
- e. Endogony

158. Autopsy of the body of a 40-year-old man, who died of odontogenic sepsis, revealed sharp thickening of poorly mobile semilunar aortic valves. The tissue of the valve is whitish and opaque. Its outer surface has thrombotic deposits 1x1.5 cm in size. What type of endocarditis is it?

- a. Acute verrucous endocarditis
- b. Ulcerative polypoid endocarditis
- c. Fibroplastic endocarditis
- d. Diffuse endocarditis
- e. Recurrent verrucous endocarditis

159. During smoking, cigarette smoke exits out of the patient's auricle. What structure of the auditory organ is damaged?

- a. Organ of Corti
- b. Bone labyrinth
- c. External acoustic meatus
- d. Membranous labyrinth
- e. Tympanic membrane

160. Методом амніоцентезу вивчено каріотип плода: 45, ХО. Який синдром у пацієнта?

- a. Дауна
- b. Клайнфельтера
- c. Шерешевського-Тернера
- d. Патау

е. Едварда

161. When stimulation frequency of an isolated heart of a rabbit increases, incomplete relaxation of the ventricles of the heart can be observed because of:

- a. Increased potassium levels in the interstitium
- b. Increased potassium levels in cardiomyocytes
- c. Inhibition of the sodium-potassium pump
- d. Increased sodium levels in cardiomyocytes
- e. Accumulation of calcium in cardiomyocytes

162. The tonsils of a 4-year-old child are enlarged, hyperemic, and covered with non-removable whitish membranes. What type of inflammation characterizes the changes in the child's tonsils?

- a. Fibrinous inflammation (croupous)
- b. Purulent inflammation
- c. Caseous necrosis
- d. Fibrinoid necrosis
- e. Fibrinous inflammation (diphtheritic)

163. До лікарні надійшов чоловік віком 32 роки із травмою лівої кисті. Під час огляду виявлено різану рану в ділянці підвищення великого пальця й утруднене його згинання. Який м'яз пошкоджено?

- a. M. flexor pollicis brevis
- b. M. flexor pollicis longus
- c. M. opponens pollicis brevis
- d. M. adductor pollicis brevis
- e. M. abductor pollicis brevis

164. A 40-year-old woman dies of intracerebral hemorrhage after the hypertensive emergency.

During an autopsy, the pathologist reveals severe obesity, excess of body hair and wide purplish stria on the abdomen. Microscopic examination of pituitary gland reveals hyperplastic acini populated by a homogenous cluster of deeply basophilic cells. Which of the following was the most likely underlying disease?

- a. Sheehan's syndrome
- b. Arterial hypertension
- c. ---
- d. Cushing disease
- e. Hyperthyroidism

165. An 8-year-old child with an incised wound on the sole of the right foot has been brought to the hospital. Deep wound with dissection of the tendon of a muscle on the plantar surface, closer to the lateral edge of the foot, was detected during the surgical treatment. The patient presents with limited elevation of the lateral edge of the foot. What muscle is most likely functionally impaired in this case?

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

166. A 16-year-old girl has no hair on the pubis and in the armpits, her mammary glands are underdeveloped, she has no menstruations. What hormone imbalance is the likely cause of these symptoms?

- a. Medullobrean hyperfunction
- b. Hyperthyroidism
- c. Ovarian failure
- d. Hyperfunction of pancreatic islet apparatus
- e. Hypothyroidism

167. A 6-year-old child, who suffers from frequent respiratory diseases, develops eczema after eating citrus fruits. Inflammatory processes tend to have a protracted course in this child. What type of

diathesis can be suspected in this case?

- a. Asthenic
- b. Neuroarthritic
- c. Hemorrhagic
- d. Exudative catarrhal
- e. Lymphohypoplastic

168. Monoamine oxidase inhibitors are widely used as psychotropic drugs. In the synapses, they change the levels of all the neurotransmitters listed below, except:

- a. Noradrenaline
- b. Acetylcholine
- c. Adrenaline
- d. Serotonin
- e. Dopamine

169. A man has an impairment of a certain part of his central nervous system, which manifests as asthenia, muscle dystonia, and a balance disorder. What part of the central nervous system is affected in this case?

- a. Red nuclei
- b. Reticular formation
- c. Vestibular nuclei
- d. Substantia nigra
- e. Cerebellum

170. Яка форма порушення кислотно-основної рівноваги у пацієнтів із накопиченням кетонових тіл у сироватці крові?

- a. Метаболічний ацидоз
- b. Респіраторний алкалоз
- c. Респіраторний ацидоз
- d. Змішаний алкалоз
- e. Метаболічний алкалоз

171. In an experiment a dog had been conditioned to salivate at the sight of food and a flash of light. After conditioning the reflex, the light was then paired with the bell. The dog didn't start to salivate. What type of inhibition was observed?

- a. Persistent
- b. Protective
- c. Extinctive
- d. Differential
- e. External

172. A 56-year-old woman is rushed to the emergency department with sudden onset of severe chest pain radiating to her left arm and jaw. She has a history of periodic chest pain for which she uses nitroglycerine sublingually, but today her medication did not relieve the pain. Her blood pressure is 140/100 mm Hg, pulse --- 130/min., respiratory rate --- 18/min., temperature --- 37°C) A bedside electrocardiogram shows ST-segment elevation in leads II, III, and aVF. Blood is drawn and sent to the lab, which is positive for specific biomarker. A diagnosis of acute inferior myocardial infarction is made, and the patient is sent to the catheterization lab for angioplasty with stent placement. Which of the following is the most likely specific and sensitive biomarker of cardiac injury?

- a. Lactate dehydrogenase 5 (LDH-5)
- b. Alanine aminopeptidase (AAP)
- c. Alanine aminotransferase (ALAT)
- d. Troponin (cTn) I or T
- e. Lactate dehydrogenase 4 (LDH-4)

173. Під час виконання оперативного втручання на щитоподібній залозі хірургу потрібно виділити верхню та нижню щитоподібні артерії, які утворюють у залозі артеріальні анастомози. Гілками яких великих судин є ці артерії?

- a. A) subclavia et truncus thyrocervicalis
- b. A) subclavia et a. transversa colli
- c. A) carotis interna et a. subclavia
- d. A) carotis externa et a. carotis interna
- e. A) carotis externa et a. subclavia

174. 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. Amniotic stalk
- b. Embryonic shield
- c. Roof of the amniotic sac
- d. Floor of the amniotic sac
- e. Extraembryonic mesoderm

175. Autopsy shows clinical presentation of diffuse osteoporosis with foci of bone tissue destruction. In the bone marrow, proliferation of atypical plasma cells can be observed. Bence Jones protein is detected in urine. What diagnosis can be made in this case?

- a. Multiple myeloma
- b. Osteodystrophy
- c. Osteoporosis
- d. Lymphogranulomatosis
- e. Bekhterev disease (ankylosing spondylitis)

176. A patient with chronic heart failure developed signs of pulmonary edema. What diuretic must be prescribed to the patient for rapid correction of this complication?

- a. Diacarb (Acetazolamide)
- b. Spironolactone
- c. Clopamide
- d. Triamzid
- e. Furosemide

177. A 7-week-old infant is brought to the pediatrician due to feeding difficulty for the last 4 days. She has been drinking very little breast milk and stops feeding as if she is tired, only to start sucking again after a few minutes. On chest auscultation, bilateral wheezing is present. A cardiac murmur starts immediately after the onset of the first heart sound (S1), reaching its maximal intensity at the end of systole, and waning during late diastole. The murmur is best heard over the second intercostal space and radiates to the left clavicle. The first heart sound (S1) is normal, while the second heart sound (S2) is obscured by the murmur. The pediatrician suspects a patent ductus arteriosus. Communication between which of the following arteries is the most likely cause of hemodynamic instability?

- a. Pulmonary artery and aorta
- b. Superior vena cava and aorta
- c. Pulmonary artery and pulmonary veins
- d. Superior vena cava and pulmonary artery
- e. Aorta and pulmonary veins

178. One of the rules of surgery is to make incisions along the so-called Langer's lines (lines of skin tension). What tissue forms the strongest layer of the dermis --- the reticular dermis?

- a. Loose fibrous connective tissue
- b. Dense regular connective tissue
- c. Epithelial tissue
- d. Dense irregular connective tissue
- e. Reticular connective tissue

179. При ультразвуковому обстеженні серця лікар спостерігає за півмісяцевими клапанами. Що відбувається з ними під час діастоли шлуночків?

- a. Стуляються, закриваючи просвіт судин
- b. Притискаються до стінок шлуночка
- c. Притискаються до стінок судин

- d. Вивертаються в порожнини судин
- e. Вивертаються в порожнини шлуночків

180. A man was hospitalized in a comatose state. His medical history states that he has been suffering from type II diabetes mellitus for 5 years. Objectively, his respiration is noisy and deep. His blood glucose is 15.2 mmol/L, ketone bodies --- 100 mcmol/L. What complication of diabetes mellitus can be characterized by such findings?

- a. Hypoglycemic coma
- b. Hepatic coma
- c. Ketoacidotic coma
- d. Hyperglycemic coma
- e. Hyperosmolar coma

181. During examination the patient is found to have low production of adrenocorticotrophic hormone. How would this affect production of the other hormones?

- a. Increase sex hormones synthesis
- b. ---
- c. Increase thyroid hormones \ synthesis
- d. Decrease hormone synthesis in the adrenal medulla
- e. Decrease insulin synthesis

182. 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. Sequestrum
- b. Infarction
- c. Dry gangrene
- d. Coagulation necrosis
- e. Bedsore

183. During a surgery for a splenic injury, the surgeon must identify the artery that supplies the spleen with blood. This artery is a branch of:

- a. A) gastroduodenalis
- b. A) hepatica communis
- c. A) gastrica sinistra
- d. Truncus coeliacus
- e. A) hepatica propria

184. Який нерв проходить в ділянці м`язової затоки?

- a. N. ischiadicus
- b. N. genitofemoralis
- c. N. suralis
- d. N. obturatorius
- e. N. femoralis

185. During the lunch, a person ate salted herring and potatoes with pickles. After a while, this person became thirsty. This sensation has been caused by impulsion from certain receptors. Name these receptors.

- a. Baroreceptors in the aortic arch
- b. Osmoreceptors in the hypothalamus
- c. Volume receptors in the hypothalamus
- d. Osmoreceptors in the liver
- e. Volume receptors in the venae cavae and atria

186. The plasma cell produces specific antibodies against a certain antigen. When the antigen is introduced into the body, the number of plasma cells increases. What blood cells increase in number in this case, resulting in increased total number of plasma cells?

- a. B lymphocytes
- b. Basophils

- c. Eosinophils
- d. Monocytes
- e. T lymphocytes

187. A group of researchers aimed to study cardiac physiology found that overstretching of atria in the heart leads to decreased sodium reabsorption in the distal convoluted tubule and increase in glomerular filtration rate. Which of the following is the most likely cause of physiologic effects discovered by researchers?

- a. Aldosterone
- b. Renin
- c. Angiotensin
- d. Natriuretic peptide**
- e. Antidiuretic hormone

188. *S aureus* can cause various infections - from purulent complications of wounds to pneumonia and sepsis. Why is penicillin therapy of staphylococcal infections not very effective?

- a. Allergic response to staphylococcal proteins
- b. Acetylase production by *S. aureus*
- c. Penicillin's inability to penetrate the membrane of *S. aureus*
- d. Penicillinase production by *S. aureus***
- e. No penicillin receptors in the cell envelope of *S. aureus*

189. A 6-year-old child was diagnosed with a helminthic infestation. What changes in the child's leukogram should be expected in this case?

- a. Increased neutrophil count
- b. Increased eosinophil count**
- c. Decreased eosinophil count
- d. Increased lymphocyte count
- e. Increased monocyte count

190. A 30-year-old patient with a femoral fracture was brought to the hospital after a car accident. The patient presents with sharply reduced blood pressure of 70/40 mm Hg, a weak pulse, and increased pain response provoked by the slightest touch in the damaged area. What should be administered in this case to prevent traumatic shock in the patient?

- a. Paracetamol
- b. Papaverine
- c. Analgin (Metamizole)
- d. Morphine**
- e. Pentazocine

191. *Helicobacter pylori* was detected in a patient with peptic ulcer disease of the stomach. What drug should be used in this case?

- a. Levomycetin (Chloramphenicol)
- b. Enteroseptol (Clioquinol)
- c. Sulfadimethoxine
- d. Metronidazole**
- e. Biseptol (Co-trimoxazole)

192. The bacteriological laboratory needs to prepare for analysis of the materials that are suspected to be contaminated with spores of anthrax causative agent. What diagnostic preparation allows for quick detection of these spores?

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

193. A 30-year-old man was hospitalized with profuse diarrhea lasting for 12 hours. There was no vomiting. What changes can be observed in the patient's water-electrolyte balance and acid-base

balance?

- a. Gaseous acidosis with dehydration
- b. No changes in blood pH
- c. Gaseous alkalosis with dehydration
- d. Non-gaseous alkalosis with dehydration
- e. Non-gaseous acidosis with dehydration

194. A person with vitamin A deficiency develops twilight vision disturbance. Name the cells that fulfill this photoreceptor function:

- a. Rod cells
- b. Ganglionic nerve cells
- c. Horizontal cells of retina
- d. Cone cells
- e. Bipolar neurons

195. In an experiment, the processes of energy production in the epithelium of the renal tubules were blocked, as a result of which the diuresis increased 4 times. What is the most likely cause of polyuria in this case?

- a. Decrease of glomerular filtration rate
- b. Decrease of renal blood flow
- c. Decrease of urea secretion
- d. Decrease of sodium ion reabsorption
- e. Decrease of potassium ion secretion

196. 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. Translocation
- c. Nullisomy
- d. Inversion
- e. Duplication

197. An unidentified surgical specimen is received for histopathologic analysis. A portion of the specimen is cut and stained with hematoxylin and eosin. Light microscopy of the specimen reveals an organ with capsule and pulp. A capsule consists of dense connective tissue, which forms trabecular extensions and penetrates the parenchyma. Parenchyma has two zones: white and red pulp. The white pulp houses periarteriolar lymphoid sheaths (PALS), which are populated by T-cells and surround central arteries. Which of the following organs most likely complies with described histological findings?

- a. Red bone marrow
- b. Thymus
- c. Spleen
- d. Tonsil
- e. Lymph node

198. What happens, when blood pressure and stimulation of baroreceptors and atrial volume receptors are decreased?

- a. Activation of the hypothalamic supraoptic nuclei and production of vasopressin
- b. Increased production of atrial natriuretic peptide
- c. Vasodilation of the systemic resistance vessels
- d. Reduced production of aldosterone
- e. Reduced production of renin in juxtaglomerular cells

199. A 20-year-old female comes to the clinic after missing her last 2 periods. Her cycles are usually regular, occurring at 28--30 day interval with moderate bleeding and some abdominal discomfort. She also complains of progressively diminishing peripheral vision. Her doctor reveals loss of vision in the lateral halves of both eyes. Involvement of which of the following structures would you most likely expect to be the reason of bitemporal hemianopsia?

- a. Optic chiasm
- b. Right optic nerve
- c. Right optic tract
- d. Left optic nerve
- e. Left optic tract

200. Порушення якої функції ока спостерігається у разі пошкодження циліарного тіла?

- a. Трофічний
- b. Захисний
- c. Світловідчуваючий
- d. Акомадаційний**
- e. Світлопровідний

201. A 37-year-old woman presents to the emergency department complaining of palpitations, dry cough, and shortness of breath. She is a nonsmoker. Her blood pressure 100/65 mm Hg, pulse --- 76/min., respiratory rate --- 23/min. Her physical exam is significant for bibasilar lung crackles and a low-pitched, mid-diastolic rumbling murmur best heard at the apical region without radiation. She has jugular vein distention and bilateral pitting edema in her lower extremities. Despite considerable efforts in the emergency department, she dies from sudden cardiac death at night. The family requests an autopsy to determine her cause of death. The patient's heart shows a mitral stenosis. Histologic examination reveals increased connective tissue in the myocardium and Ashoff-Talalaev's granulomas. Which of the following is the most likely diagnosis?

- a. Rheumatic heart disease**
- b. Dermatomyositis
- c. Systemic scleroderma
- d. Polyarteritis nodosa
- e. Systemic lupus erythematosus

202. A patient needs to be prescribed a wide-spectrum fluoroquinolone agent. Select this drug from the list.

- a. Azlocillin
- b. Amoxicillin
- c. Ciprofloxacin**
- d. Carbenicillin
- e. Chinoxydin

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

- a. Interferon
- b. Isoniazid
- c. Dexamethasone
- d. Vancomycin
- e. Amoxicillin**

204. Жінка віком 47 років осліпла внаслідок хронічної інфекції зумовленої *Chlamidia trachomatis*. Для виявлення цитоплазматичних включень, специфічних для цього збудника, було виготовлено мікропрепарат із зішкрубу з кон'юнктиви. Який із нижченаведених методів треба застосувати для його фарбування?

- a. Романовського-Гімзи
- b. Лефлера**
- c. Бурі-Гінса
- d. Грама
- e. Нейссера

205. Дівчинці віком 13 років лікар призначив для лікування мегалобластної анемії препарат, що стимулює перехід мегалобластного типу кровотворення в нормобластний та бере участь у синтезі пуриново- і піримідинових основ, активізує синтез білка, метіоніну. Який препарат призначено пацієнтці?

- a. Еритропоетин
- b. Заліза сульфат
- c. Плоди шипшини
- d. Гемостимулін
- e. Ціанокобаламін

206. Laboratory study of the blood of a 33-year-old patient revealed erythrocyte agglutination reaction in standard sera of groups I and II. Agglutination reaction was not observed with a group III serum and an anti-rhesus serum. What blood group (taking into account the CDE system) can be transfused to this person, if necessary?

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

207. A 35-year-old woman complains of pain in her joints and numbness of her fingers and toes. During examination, a doctor notes that the patient's face is amimic and has thickened skin. Biopsy of a cutaneomuscular flap was performed for this patient. Histology detects disorganization of dermal connective tissue, mucoid and fibrinoid swelling, weak cellular response, and foci of gross sclerosis and hyalinosis. Atrophy of integumental structures, sclerosis of vascular intima, and perivascular bulbar sclerosis are observed in the patient. Make the diagnosis.

- a. Systemic lupus erythematosus.
- b. Systemic scleroderma
- c. Rheumatism
- d. Rheumatoid arthritis
- e. Polyarteritis nodosa

208. A 27-year-old parturient woman undergoes a complicated childbirth with impending cervical rupture. What pain relief medicine would be the safest in this case?

- a. Promedol (Trimeperidine)
- b. Morphine hydrochloride
- c. Fentanyl
- d. Diazepam
- e. Analgin (Metamizole)

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

- a. Bacteriological analysis
- b. Serological test
- c. Microscopy with Aujeszky stain
- d. Microscopy with Burry-Gins stain
- e. Ascoli's thermoprecipitation test

210. A 10-year-old child has painful swallowing, neck edema, temperature rise up to 39.0°C, the whole body is covered with bright-red petechial rash. Back of the throat and tonsils are hyperemic, the tongue is crimson-colored. Tonsillar surface is covered with isolated grayish-colored necrosis nidi. What disease is it?

- a. Diphtheria
- b. Influenza
- c. Measles
- d. Meningococcal nasopharyngitis
- e. Scarlet fever

211. A patient complains of drooping eyelid (ptosis) that appeared recently. What nerve is affected in this case?

- a. Abducens
- b. Ophthalmic

- c. Oculomotor
- d. Optic
- e. Trochlear

212. The patient's ECG shows that the ST segment is displaced above the isoelectric line by 1 mm and the T wave duration is increased to 0.25 seconds. What process is disturbed in the patient, causing these changes on the ECG?

- a. Atrial repolarization
- b. Atrial depolarization
- c. Ventricular depolarization
- d. Ventricular repolarization**
- e. Atrioventricular conduction

213. A parenchyma sample was taken from a hematopoietic organ of a patient for diagnostic purposes. The sample contains megakaryocytes. What hematopoietic organ is it?

- a. Thymus
- b. Lymph node
- c. Red bone marrow
- d. Tonsil
- e. Spleen

214. In an experiment, despiralization of the DNA molecule was disrupted in an animal cell. What processes will primarily stop occurring in this cell?

- a. Processing
- b. Translation
- c. Repair
- d. Transcription
- e. Termination

215. Examination shows that the patient's sternocleidomastoid muscle and the upper edge of the trapezius muscle suffer from atrophy. Turning the head into the opposite direction is problematic. What nerve is affected in this case?

- a. Intercostal nerve
- b. Vagus nerve
- c. Brachial plexus
- d. Hypoglossal nerve
- e. Accessory nerve**

216. У пацієнта з хронічним гломеролонефрітом порушується інкреторна функція нирок. Дефіцит яких формених елементів крові спостерігається при цьому патологічному стані?

- a. Лейкоцитів і тромбоцитів
- b. Еритроцитів**
- c. Тромбоцитів
- d. Еритроцитів і лейкоцитів
- e. Лейкоцитів

217. A 59-year-old man, a business manager, developed intense burning retrosternal pain with irradiation into 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. Coronary artery thrombosis
- b. Increased level of blood \\\ catecholamines**
- c. Coronary atherosclerosis
- d. Functional cardiac overload
- e. Intravascular aggregation of blood cells

218. A 60-year old man with a history of hypertension, diabetes and hyperlipidemia had a sudden onset of right-sided weakness. By the time the ambulance arrived, he had difficulty speaking. Unfortunately, the patient died within the next 2 hours and an autopsy was performed immediately.

The gross examination of the cerebral left hemisphere showed brain swelling, widened gyri and poorly demarcated gray-white junction. Which of the following is the most likely cause of this patient's death?

- a. Cyst
- b. Tumor
- c. Intracerebral hemorrhage
- d. Abscess
- e. Ischemic stroke

219. A 63-year-old man, who has been suffering from chronic fibrous-cavernous pulmonary tuberculosis for 24 years, has been delivered to a nephrology department with uremia. Intravital diagnostic test for amyloid in the kidneys was positive. What amyloidosis is it in this case?

- a. Hereditary (genetic)
- b. Secondary systemic
- c. Senile
- d. Localized (focal)
- e. Primary systemic

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

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

221. A patient presents with a disturbed process of urea synthesis. It indicates the pathology of the following organ:

- a. Brain
- b. Muscles
- c. Liver
- d. Bladder
- e. Kidneys

222. A man has convergent strabismus. What muscle of the eyeball is damaged in this case?

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

223. Acute herpetic gingivostomatitis is the most common primary infection caused by herpes simplex virus, type 1. What material should a dentist obtain for the laboratory analysis to confirm this diagnosis?

- a. Urine
- b. Fluid from the vesicles
- c. Blood
- d. Sputum
- e. Saliva

224. Diphtheria toxin is a potent inhibitor of protein synthesis in eukaryotes. What is its molecular mechanism of action?

- a. Protein kinase inhibition
- b. Protein kinase phosphorylation
- c. Inactivation of the initiation factor
- d. Irreversible modification of an elongation factor
- e. Dephosphorylation of the termination factor

225. What will be observed in a 23-year-old man with untreated type 1 diabetes mellitus?

- a. Acidosis, hypokalemia
- b. Alkalosis, hyperkalemia
- c. Acidosis, normokalemia
- d. Acidosis, hyperkalemia**
- e. Alkalosis, hypokalemia

226. A woman, who complains of a constant feeling of fear and anxiety, has been diagnosed with neurosis and prescribed a drug with an anxiolytic effect. What drug is it?

- a. Caffeine and sodium benzoate
- b. Aminazine (Chlorpromazine)
- c. Diazepam**
- d. Piracetam
- e. Ginseng tincture

227. A 6-year-old child has purulent inflammation of the middle ear that was complicated by purulent inflammation of the mastoid cells. Trepanation (dissection) of the mastoid process became necessary. In this case, the surgeon must remember that a certain venous sinus is located close by, to avoid damaging it. Name this sinus.

- a. Cavernous sinus
- b. Sigmoid sinus**
- c. Superior sagittal sinus
- d. Inferior sagittal sinus
- e. Transverse sinus

228. A 65-year-old woman presents to the emergency department because of shortness of breath and chest pain that started a few hours ago. She did not have a fever, expectoration, or any accompanying symptoms. She has a history of right leg deep vein thrombosis that occurred 5 years ago. Some time later, she dies of severe respiratory distress. A pulmonary autopsy specimen reveals red loose mass that is lodged in the bifurcation of the pulmonary trunk with extensions into both the left and right main pulmonary arteries. Which of the following is the most likely diagnosis?

- a. Pneumonia
- b. ---
- c. Pneumothorax
- d. Myocardial infarction
- e. Thromboembolism**

229. The patient's systolic blood pressure is 90 mm Hg, diastolic --- 70 mm Hg. Such systolic blood pressure is caused by the decrease of the following factor:

- a. Total peripheral resistance
- b. Vascular tone
- c. Pumping ability of the right heart
- d. Pumping ability of the left heart**
- e. Aortic compliance

230. A 3-year-old child has an acute intestinal infection with profuse diarrhea, followed by the development of anhydremic shock. What is the leading link in the development of this complication?

- a. Hypovolemia**
- b. Decreased arterial pressure
- c. Reduced cardiac output per minute
- d. Intoxication
- e. Hypoxia

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

- a. Formation of maturation spindle
- b. Partial or complete cell destruction**
- c. Intensive energy production
- d. Restoration of cytoplasmic membrane

e. Intensive protein synthesis

232. A 34-year-old man visits his dentist complaining of toothache. After a dental procedure that involved extraction of several teeth, he develops severe bleeding lasting more than 15 minutes. He has a history of chronic hepatitis C) Which of the following is the most likely cause of prolonged bleeding in this patient?

- a. Thrombocytopenia
- b. Hypoalbuminemia
- c. ---
- d. Hypocalcemia
- e. Hypofibrinogenemia**

233. A 28-year-old patient has been hospitalized with complaints of abdominal pain, loose stools, weakness, fatigue, and shortness of breath. The patient has a history of a surgery for acute intestinal obstruction 2 years ago, with resection of 60 cm of the small intestine. At the time of the hospitalization, patient's blood test results were as follows: erythrocytes -  $2.4 \cdot 10^{12}/L$ , reticulocytes - 0.4%, hemoglobin - 80 g/L, color index - 1.25. The blood smear test detected macroanisocytes, poikilocytes, schizocytes, isolated megalocytes, megaloblasts. What pathology of the blood system can be characterized by such findings?

- a. B<sub>12</sub> deficient anemia**
- b. Hemolytic anemia
- c. Chronic posthemorrhagic anemia
- d. Iron deficient anemia
- e. Hypoplastic anemia

234. A person with drug-induced poisoning is unconscious and presents with miosis and intensified spinal monosynaptic reflexes. What substance could be the cause of the poisoning in this case?

- a. Diazepam
- b. Dimedrol (Diphenhydramine)
- c. Aminazine (Chlorpromazine)
- d. Morphine**
- e. Ethaminal sodium

235. Гілки якого нерва забезпечують шкіру чутливість передньобічної поверхні передпліччя?

- a. N. radialis
- b. N. musculocutaneus**
- c. N. ulnaris
- d. N. axillaris
- e. N. medianus

236. IgM to the rubella virus have been detected in a pregnant woman. Based on these findings, the obstetrician-gynecologist recommended terminating the pregnancy due to the high probability of teratogenic effects on the fetus. It is important that specifically IgM have been detected, because immunoglobulins of this class:

- a. Are an indicator of resent infection
- b. Have the largest molecular mass
- c. Are associated with anaphylactic reactions
- d. Can breach the placental barrier
- e. Are the main factor of antiviral protection

237. A 27-year-old man (injection drug user) for a long time has been suffering from oral candidiasis, persistent cough, and diarrhea, which gives grounds to suspect HIV infection. The patient was referred for immunological investigation. What cell count will likely be low in this patient?

- a. Helper T cells**
- b. Plasma cells
- c. Suppressor T cells
- d. Immunological memory cells
- e. B lymphocytes

238. Чоловік віком 38 років скаржиться на швидку стомлюваність, у положенні стоячи із закритими очима він похитується, втрачає рівновагу. Тонус скелетних м'язів знижений. Яка з нижчепереліканих структур мозку, найбільш імовірно, вражена у пацієнта?

- a. Прецентральна звивина кори великих півкуль
- b. Базальні ганглії
- c. Мозочок
- d. Гіпоталамус
- e. Тalamus

239. В експерименті тварині перерізали аксони нейросекреторних клітин супраоптичного ядра гіпоталамуса. Накопичення якого гормону буде порушено в гіпофізі?

- a. Адренокортикопропіну
- b. Ліпотропіну
- c. Соматотропіну
- d. Вазопресину
- e. Пролактину

240. A person with a head injury in the temporal region has been diagnosed with an epidural hematoma. What artery is most likely to be damaged in this case?

- a. Middle cerebral artery
- b. Posterior auricular artery
- c. Middle meningeal artery
- d. Anterior meningeal artery
- e. Superficial temporal artery

241. A person produces little amount of thick saliva; its enzymatic activity is reduced, while its mucus content is increased. What glands are most likely to be functionally impaired, causing this condition?

- a. Submandibular glands
- b. Proper mucosal glands
- c. ---
- d. Sublingual glands
- e. Parotid glands

242. The molecule of immature mRNA (pro-mRNA) contains more triplets than there are amino acids in the synthesized protein, because translation is normally preceded by:

- a. Initiation
- b. Mutation
- c. Repair
- d. Processing
- e. Replication

243. A 25-year-old male visits his family physician for a 5-day history of fever and fatigue. Upon further questioning, he says that he also had constant muscular pain and headaches. He adds additional information by giving a history of regular unprotected sexual relationship with multiple partners. He is a non-smoker and drinks alcohol occasionally. Vital signs: heart rate --- 98/min., respiratory rate --- 16/min., temperature --- 38°C and blood pressure --- 120/80 mm Hg. On physical examination, he is icteric and hepatosplenomegaly is evident with abdominal tenderness particularly in the right upper quadrant. The serologic markers show the following pattern: IgM anti-HBc positive, HBsAg positive. Which of the following is the most likely diagnosis?

- a. Acquired immune deficiency syndrome (AIDS)
- b. Viral hepatitis B
- c. Viral hepatitis A
- d. Syphilis
- e. Tuberculosis

244. In the body of a 37-year-old woman, who died with signs of pulmonary edema, there was detected an acute deformation of the aortic valve: it is shortened, thickened, ulcerated, has areas of stone-like density. On its external surface there are large, up to 2 cm in diameter, thrombotic plaques.

The left ventricle wall is 2.2 cm thick. The cardiac muscle is dull, matt, and flaccid. What type of endocarditis corresponds with the described changes in the aortic valve?

- a. Acute verrucous endocarditis
- b. Diffuse endocarditis
- c. Fibroplastic endocarditis
- d. Recurrent verrucous endocarditis
- e. Ulcerative polypoid endocarditis

245. An 18-year-old girl comes to her physician with concern about her health because she has not achieved menarche. She denies any significant weight loss, changes in mood, or changes in her appetite. She mentions that her mother told her about mild birth defects, but she cannot recall the specifics. Past medical history and family history are benign. On physical examination, the patient is short in stature, has a short and webbed neck and wide chest. Staining of buccal smear reveals absence of Barr bodies in the nucleus of epithelial cells. A urine pregnancy test is negative. Which of the following genetic disorders is the most likely cause of this patient's condition?

- a. Turner syndrome
- b. Edwards syndrome
- c. Patau syndrome
- d. Klinefelter syndrome
- e. Cri du chat (<<cat-cry>>) syndrome

246. An unidentified surgical specimen is received for histopathologic analysis. A portion of the specimen is cut and stained with hematoxylin and eosin. Under the microscope, you see an organ encapsulated by dense connective tissue that extends to the deeper areas by way of the trabecular extensions. The organ can be subdivided into two regions: a cortex with lymphoid nodules and medulla with medullary cords populated by plasma cells, B-cells and T-cells. Which of the following structures is most likely the origin of this surgical specimen?

- a. Lymph node
- b. Tonsils
- c. Spleen
- d. Bone marrow
- e. Thymus

247. A 37-year old female presents to the clinic complaining of severe pain in her left wrist and tingling sensation in her left thumb, index finger, and middle finger, and some part of her ring finger. The pain started as an occasional throb and she could ignore it or take ibuprofen but now the pain is much worse and wakes her up at night. She works as a typist and her pain mostly increases after typing all day. Her right wrist and fingers are fine. Nerve conduction studies reveal nerve compression. Which of the following nerves is most likely compressed in this patient?

- a. Radial nerve
- b. Ulnar nerve
- c. Musculocutaneous nerve
- d. Axillary nerve
- e. Median nerve

248. A man died after a surgery for the perforation of the colon wall with signs of diffuse purulent peritonitis. Autopsy shows that the mucosa of the colon wall is thickened, covered in a fibrinous membrane, and has isolated ulcers that penetrate it to varying depths. Histology detects mucosal necrosis, the presence of fibrin, and leukocyte infiltration with hemorrhagic foci. What disease developed a complication in this case, causing the death of this man?

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

249. A 43-year-old man seeks evaluation at an emergency department with complaints of fever with chills, malaise, diffuse abdominal pain for over a week, diarrhea and loss of appetite. He says that his

symptoms are progressively getting worse. He recalls that the fever began slowly and climbed its way up stepwise to the current 39.8°C) His blood pressure is 110/70 mm Hg. A physical exam reveals a coated tongue, enlarged spleen and rose spots on the abdomen. Serologic study shows the agglutinin O titre of 1:200 by the Widal test. Which of the following is the most likely causative organism for this patient's condition?

- a. Mycobacterium tuberculosis
- b. **Salmonella typhi**
- c. Vibrio cholerae
- d. Leptospira interrogans
- e. Enterohemorrhagic E. coli

250. During a surgery with administration of an inhalation anesthetic and muscle relaxants, the anesthesiologist noticed a rapid increase in the patient's body temperature that reached 43°C) What pathology did the patient develop?

- a. Hyperthermic syndrome
- b. Overheating
- c. Physical hyperthermia
- d. Traumatic shock
- e. Infection-induced fever

251. As a result of a stroke (hemorrhage in the brain), the patient cannot perform voluntary movements of the muscles in the head and neck. Brain examination using the NMR imaging revealed that the hematoma was located in the genu of the internal capsule. What conduction pathway is damaged in this patient?

- a. Fibrae frontopontinus
- b. Fibrae corticospinalis
- c. Fibrae thalamocorticalis
- d. Fibrae corticothalamicus
- e. Fibrae corticonuclearis

252. A patient with scurvy presents with disturbed processes of proline and lysine hydroxylation in the collagen. What biochemical process is inhibited in this case, causing this disorder?

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

253. If a certain part of the conductive path of the visual analyzer is damaged, it causes the loss of light sensitivity in the medial half of the retinas on both sides. Name this part of the conductive path:

- a. Left optic nerve
- b. Right optic tract
- c. Right optic nerve
- d. **Optic chiasm**
- e. Left optic tract

254. Methyl groups (\$-CH<sub>3</sub>\$) are used in the body for the synthesis of such important compounds as creatine, choline, adrenaline, etc. What essential amino acid is the source of these groups?

- a. Leucine
- b. Tryptophan
- c. **Methionine**
- d. Isoleucine
- e. Valine

255. A patient undergoes right-sided pneumonectomy due to lung cancer. Name the anatomical structures of the right lung root (downward order):

- a. Veins, artery, bronchus

- b. Bronchus, artery, veins
- c. Artery, bronchus, veins
- d. Artery, veins, bronchus
- e. Veins, bronchus, artery

256. Gastroscopy has detected a tumor-like formation 1.5 cm in diameter, attached to a pedicle, in the area of the lesser curvature. What is the character of the tumor growth in this case?

- a. Infiltrating
- b. Expansive
- c. Exophytic
- d. Endophytic
- e. Appositional

257. A patient with suspected dysentery was admitted to the infectious diseases department. What diagnostic method can confirm this diagnosis?

- a. Bacteriological method
- b. Microscopy
- c. Allergy testing
- d. Biological method
- e. Serological method

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

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

259. Під час мікроскопічного дослідження препарату, виготовленого з периферійної ділянки легені, виявлено поперечний переріз трубчастого утворення, стінка якого складається зі слизової та адвенциційної оболонок. Поверхня слизової оболонки має численні складки, а м'язова пластинка утворена суцільним шаром гладких міоцитів. Який це елемент повітроносних шляхів?

- a. Термінальна бронхіола
- b. Альвеолярний хід
- c. Великий бронх
- d. Середній бронх
- e. Малий бронх

260. A 54-year-old woman has a total thyroidectomy for papillary thyroid carcinoma. 11 hours after operation she complains of tingling around her mouth. On physical examination, the Trousseau's sign and Chvostek's sign are present. Her condition rapidly deteriorates with laryngospasm and focal seizures. The surgeon suggests surgical destruction of parathyroid glands. Which of the following is the most likely cause of this patient's neurologic abnormality?

- a. Hyperchloremia
- b. Hyperkalemia
- c. Hyponatremia
- d. Hypophosphatemia
- e. Hypocalcemia**

261. A 56-year-old man presents for a checkup. The patient says he has to urinate quite frequently, but denies any dysuria or pain on urination. Past medical history is significant for diabetes mellitus type 2 and hypertension, both managed medically. Current medications are metformin, aspirin,

rosuvastatin, captopril and furosemide. Laboratory findings are significant for the following: Glycated Hemoglobin (Hb A1c) --- 8.0%, Fasting Blood Glucose --- 12 mmol/L. His doctor decides to add glibenclamide to the therapy. Which of the following is the most likely mechanism of this drug's action?

- a. Stimulation of insulin release
- b. Stimulation of glucose reuptake by the cell
- c. ---
- d. Facilitation of glucose absorption in the intestine
- e. Inhibition of insulin release

262. Two weeks ago, an illness was reported in several children at the orphanage. Based on the description of its clinical manifestations and epidemiological data, the epidemiologist suspects an outbreak of measles infection. What type of laboratory analysis can confirm this provisional diagnosis?

- a. Serology
- b. Rhinocytoscopy
- c. Allergy testing
- d. Immunofluorescence
- e. Inoculation of chicken embryos

263. The father and mother are healthy. Amniocentesis detects that the karyotype of the fetus is 45 X0. Make the diagnosis.

- a. Patau syndrome
- b. Turner syndrome
- c. Edwards syndrome
- d. Cri-du-chat syndrome
- e. Trisomy X

264. Histology of the red bone marrow biopsy material detected cells of the granulocytic series. What changes occur in the nucleus during the differentiation of these cells?

- a. Pyknosis
- b. Enlargement
- c. Polyploidization
- d. Segmentation
- e. Enucleation

265. Після початку лікування туберкульозу легень пацієнт звернувся до лікаря зі скаргами на появу червоних сліз та сечі. Який препарат спричинив ці зміни?

- a. Бензилпеніцилін натрієва сіль
- b. Рифампіцин
- c. Бісептол-480
- d. Цефазолін
- e. Бензилпеніцилін калієва сіль

266. A person has a knee injury with a crushed patella. In this case, damage is likely to be observed in a tendon of the following thigh muscle:

- a. Adductor longus muscle
- b. Adductor magnus muscle
- c. Quadriceps femoris muscle
- d. Sartorius muscle
- e. Biceps femoris muscle

267. Diazepam was prescribed to a person with psychoemotional disorders and disturbed sleep. The effect of diazepam is based on:

- a. Inhibition of the limbic system
- b. Increase of reflex reaction time
- c. Decrease of blood pressure
- d. Excitation of reticular formation

e. Activation of the GABA receptor system

268. Examination of a patient revealed a reduced immunoglobulin count. What cells of the patient's immune system are likely to have an impaired function, causing this condition?

- a. T-suppressors
- b. Plasmablasts
- c. Plasma cells
- d. T-killers
- e. T-helpers

269. An 11-year-old girl is brought to the doctor's office by her mother who states her daughter has been weak with swollen face for 3 days. The mother states her daughter had always been healthy and active until the initiation of symptoms. Upon inquiry, the girl describes a foamy appearance of her urine but denies blood in urine, urinary frequency at night, or pain during urination. Physical examination reveals generalized swelling of the face and pitting edema on the lower limbs. Laboratory study shows proteinuria and microscopic hematuria. Which of the following is the most likely cause of findings in the laboratory study of urine?

- a. Increased hydrostatic pressure in Bowman's capsule
- b. Increased plasma oncotic pressure
- c. ---
- d. Increased permeability across the glomerular capillary wall
- e. Increased glomerular hydrostatic pressure

270. A patient has been diagnosed with myocardial infarction of the posterior wall of the left ventricle. In this case, thrombosis has occurred in the basin of the following artery:

- a. -
- b. Ramus interventricularis anterior a.coronaria dextra
- c. Ramus septalis anterior a.coronaria sinistra
- d. Ramus interventricularis posterior a.coronaria dextra
- e. Ramus septalis posterior a.coronaria dextra

271. During the examination of a child, the doctor noticed symmetrical roughness of the child's cheeks, diarrhea, and nervous disorders. What nutritional factors are deficient in this case, causing this condition in the child?

- a. Methionine, lipoic acid
- b. Phenylalanine, pangamic acid
- c. Threonine, pantothenic acid
- d. Nicotinic acid, tryptophan
- e. Lysine, ascorbic acid

272. A large number of glucose oxidation metabolites are dissolved in the cytoplasm of myocytes. What metabolite can be directly converted into lactate?

- a. Fructose-6-phosphate
- b. Pyruvate
- c. Glucose-6-phosphate
- d. Glycerophosphate
- e. Oxaloacetate

273. Які зміни з боку ізольованого серця можна очікувати після введення в перфузійний розчин адреналіну?

- a. Збільшення сили скорочень
- b. Зупинка серця в діастолі
- c. Збільшення частоти і сили скорочень
- d. Зменшення сили скорочень
- e. Збільшення частоти скорочень

274. After a hemorrhage into the left hemisphere of the brain, the patient has lost the ability to speak. In this case, thrombosis occurred in the basin of:

- a. Arteria cerebri posterior

- b. Arteria cerebri media
- c. Arteria communicans posterior
- d. Arteria cerebri anterior
- e. Arteria communicans anterior

275. За умов дії якого ферменту арахідонова кислота (джерело синтезу ейкозаноїдів) вивільняється з фосфоліпідного бішару клітинних мембран?

- a. Фосфоліпази D
- b. Циклооксигенази
- c. Ліпоксигенази
- d. Фосфоліпази A<sub>2</sub>
- e. Фосфоліпази C

276. Echo-planar imaging is a technique that uses gamma rays for MRI scans.

- a. Not given
- b. False
- c. -
- d. True
- e. -

277. A patient has ascites, his spleen is double the normal size, he has esophageal and rectal varices. Histology of the biopsy material obtained from the liver revealed micronodular cirrhosis. What process has complicated the hepatic cirrhosis in this case?

- a. Portal hypertension syndrome
- b. Heart failure
- c. Hepatolienal syndrome
- d. Budd-Chiari syndrome
- e. Hepatocellular dysfunction

278. Яке ускладнення виникне у пацієнта з діагнозом цироз печінки і значним зниженням в сироватці крові вмісту альбуміну та глобуліну?

- a. Аміноацидурия
- b. Набряки
- c. Енцефалопатія
- d. Геморагічний синдром
- e. Анемія

279. After a cholecystectomy, the processes of  $\text{Ca}^{++}$  absorption through the intestinal wall became impaired in the patient. What vitamin must be prescribed to stimulate this process?

- a. Vitamin K
- b. Vitamin C
- c. Vitamin D<sub>3</sub>
- d. Vitamin B<sub>12</sub>
- e. Vitamin R

280. A patient has been fasting for 48 hours. What substances are used by muscle tissue as energy sources under these conditions?

- a. Ketone bodies
- b. Glycerin
- c. Lactate
- d. Pyruvate
- e. Amino acids

281. Пацієнтці віком 72 роки, яка хворіє на гіпертонічну хворобу, з метою зниження АТ було рекомендовано препарат із групи блокаторів кальціевих каналів. Як проявиться ефект цих ліків на функції міокарда шлуночків?

- a. Збільшенням тривалості реполяризації
- b. Зростанням скоротливості
- c. Збільшенням ЧСС

- d. Ефект буде відсутній
- e. Зменшенням фази плато

282. У чоловіка віком 46 років у лабораторних дослідженнях крові виявлено підвищення активності креатинфосфокінази. Який патологічний стан, найімовірніше, виник у пацієнта?

- a. Гострий панкреатит
- b. Інфаркт міокарда
- c. Ниркова недостатність
- d. Гемолітична анемія
- e. Тромбоемболія легеневої артерії

283. A person with dilated subcutaneous veins clearly visible in the area of the navel ("caput medusae") has been hospitalized. What large vein has impaired patency in this case?

- a. V. mesenterica superior
- b. V. iliaca interna
- c. V. renalis
- d. V. portae hepatis
- e. V. mesenterica inferior

284. A 33-year-old woman has hepatocerebral dystrophy (Wilson's disease). Ceruloplasmin levels in her blood are decreased. Amino acid levels are sharply increased in her urine. These changes are primarily caused by the intensification of the following process:

- a. Urea synthesis
- b. Gluconeogenesis
- c. Formation of copper complexes with amino acids
- d. Reamination of amino acids
- e. Breakdown of tissue proteins

285. A 29-year-old woman has a fever of  $38.3^{\circ}\text{C}$  and intense pain in her lower abdomen, observed for the last several days. What substances mediate the synaptic transmission between the pain fibers that go from the pelvic organs and spinal cord neurons?

- a. Acetylcholine, nitrogen monoxide
- b. Serotonin, vasoactive intestinal polypeptide (VIP)
- c. Glutamate, substance P
- d. Endorphins, GABA
- e. Noradrenaline, ATP

286. An adult man has 24-hour urine output of 20 liters with low specific gravity. This condition is most likely caused by the deficiency of a certain substance in the body. Name this substance.

- a. Renin
- b. Parathyroid hormone
- c. Antidiuretic hormone
- d. Aldosterone
- e. Natriuretic factor

287. A 42-year-old man died of acute anemia due to pulmonary hemorrhage. An irregularly-shaped round cavity 5–6 cm in size was detected in the second segment of the right lung. The cavity communicates with the bronchial lumen. The inner surface of the cavity is uneven and covered with a flabby, structureless, yellowish tissue. Its wall is thin and consists of compacted lung tissue with inflammatory alterations. Histology shows that the inner layer of the cavity consists of molten caseous masses with a large number of segmented leukocytes. What is indicated by the changes detected in the lungs of the deceased man?

- a. Acute cavernous tuberculosis
- b. Pulmonary infarction with septic disintegration
- c. Lung abscess
- d. Disintegrating pulmonary carcinoma
- e. Bronchoectatic cavern

288. Participation of a certain part of the central nervous system is mandatory for the formation of

voluntary defecation in a child. What part of the central nervous system is it?

- a. Coccygeal segments of the spinal cord
- b. Cerebral cortex
- c. Lateral nuclei of the hypothalamus
- d. Ventromedial nuclei of the hypothalamus
- e. Medulla oblongata

289. У бактеріологічну лабораторію доставлений матеріал від пацієнта з діагнозом: перитоніт.

При мікроскопічному дослідженні було виявлено грампозитивні та грамнегативні мікроорганізми. Яка морфологічна структура бактеріальної клітини зумовлює фарбування за Грамом?

- a. Капсула
- b. Джгутики
- c. Клітинна стінка
- d. Спори
- e. Цитоплазма

290. Який препарат належить до групи блокаторів кальцієвих каналів третього покоління?

- a. Лозартан
- b. Атенолол
- c. Магнію сульфат
- d. Амлодипін
- e. Лізинопріл

291. When ascending to the top of Elbrus, a mountain climber experiences oxygen starvation, dyspnea, palpitations, and numbness of the extremities. What kind of hypoxia has developed in the mountain climber?

- a. Tissue
- b. Cardiac
- c. Hemic
- d. Circulatory
- e. Hypoxic

292. A 55-year-old woman has mitral valve insufficiency and had myocarditis 10 years ago. Currently she has no complaints. Her hemodynamics is within the normal range. What general nosology concept corresponds with this situation?

- a. Pathological process
- b. Pathological reaction
- c. Pathological condition
- d. Typical pathological process
- e. Compensatory reaction

293. A patient at the oncology department has undergone radiation therapy. After that, morphology detected a significant disruption in the process of regeneration of epithelial layer in the small intestine mucosa. What cells of the epithelial membrane are damaged in this case?

- a. Exocrinocytes with acidophilic granulation (Paneth cells)
- b. Endocrine cells
- c. Columnar epitheliocytes with a brush border
- d. Columnar epitheliocytes without a brush border, located in the crypts
- e. Goblet exocrinocytes

294. A microslide demonstrates an organ with its wall consisting of three layers. The inner layer has tubular glands and undergoes cyclic changes. Name this organ:

- a. Uterus
- b. Ureter
- c. Vagina
- d. Esophagus
- e. Urinary bladder

295. Укажіть ефективні умови окисного фосфорилювання.

- a. Доступність АДФ, оксиген, відновлені еквіваленти
- b. Доступність АМФ, оксиген, відновлені еквіваленти
- c. Доступність АТФ, окислені еквіваленти, вуглекислий газ
- d. Доступність ГДФ, оксиген, відновлені еквіваленти
- e. Доступність АМФ, окислені еквіваленти

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

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

297. Blood testing of a patient with jaundice revealed an increase in total bilirubin due to its indirect fraction. Patient's urine and feces have a saturated color. What is the most likely mechanism of these disorders?

- a. Impaired bile outflow from the liver
- b. Increased hemolysis of erythrocytes
- c. Damaged liver parenchyma
- d. Disturbed urobilinogen conversion in the liver
- e. Disturbed formation of direct bilirubin

298. During the first year of life, children easily develop seizures that can be associated with incomplete myelination of nerve fibers. What neuroglial cells are associated with this condition the most?

- a. Microglial cells
- b. Oligodendrocytes
- c. Fibrous astrocytes
- d. Ependymocytes
- e. Protoplasmic astrocytes

299. A 42-year-old man with verified HIV infection developed a fever, generalized lymphadenopathy, diarrhea, and slight weight loss. What period of HIV infection corresponds with these symptoms?

- a. Incubation period
- b. AIDS-related complex
- c. HIV encephalomyelitis
- d. Period of acquired immunodeficiency syndrome
- e. Period of persistent generalized lymphadenopathy

300. A 48-year-old woman has been diagnosed with Raynaud syndrome (a spasm of peripheral blood vessels) and prescribed an adrenotropic agent. What group does this drug belong to?

- a. Beta-1-blockers
- b. Alpha-blockers
- c. Alpha/beta-adrenergic agonists
- d. Beta-1-adrenergic agonists
- e. Beta-2-blockers

301. A histological specimen of an eyeball shows a biconvex structure, connected to the ciliary body with the fibrous strands of the ciliary zonule and covered on top with a transparent capsule. What structure is it?

- a. Cornea
- b. Crystalline lens
- c. Vitreous body
- d. Sclera
- e. Ciliary body

302. A patient with type 1 diabetes mellitus has been prescribed insulin as a substitution therapy.

What is the mechanism of action of this drug?

- a. COX-2 inhibition
- b. Increase of the glucose permeability of cell plasma membranes**
- c. Stimulation of  $\alpha$ -cells of pancreatic islets
- d. Blockade of H1-histamine receptors
- e. Intensification of anaerobic glycolysis

303. У жаби зруйнували структуру ЦНС, внаслідок чого тварина нахилилася в бік руйнування через суттєве зменшення тонусу розгиначів. Яку структуру ЦНС пошкодили?

- a. Червоне ядро
- b. Вестибулярне ядро Дейтерса**
- c. Чотиригорбкове тіло
- d. Бліда куля
- e. Чорна речовина

304. У пацієнта з діагнозом епідемічний енцефаліт спостерігаються одно- або двосторонній птоз (опущення повіки), розбіжна косоокість, порушення акомодації. Зіниці розширені. Ядра якої пари черепно-мозкових нервів уражені?

- a. VI
- b. V
- c. VII
- d. III**
- e. IV

305. Який механізм розвитку протиболіової дії наркотичного анальгетика?

- a. Гальмування холінергічних рецепторів
- b. Активація опіатних рецепторів**
- c. Активація D2-дофамінових рецепторів
- d. Гальмування гістамінергічних рецепторів
- e. Гальмування серотонінергічних рецепторів