1. Який препарат із групи психотропних засобів блокує дофамінові рецептори?
a. Кофеїн-бензоат натрію
b. Амітриптилін
c. Діазепам
d. Аміназин (хлорпромазин)
e. Анальгін (метамізол натрію)

2. A 37-year-old man developed leg edema after prolonged fasting. What pathogenetic factor plays the leading role in the development of edema in this case?
a. Increased osmotic pressure of interstitial fluid
b. Decreased hydrostatic blood pressure
c. Decreased osmotic blood pressure
d. Decreased oncotic blood pressure
e. Increased oncotic pressure in the tissues

3. Як називаються реакції в яких багаторазово повторюється цикл елементарних актів за участю активних частинок?
a. Фотохімічні
b. Ланцюгові
c. Послідовні
d. Пов'язані
e. Паралельні

4. Який спосіб титрування використовують, якщо до розчину досліджуваної речовини додають точно виміряний надлишок допоміжного титранта?
a. Пряме титрування
b. Будь-яке титрування
c. Титрування за залишком
d. Неводне титрування
e. Замісникове титрування

5. What is the most common side effect of inhaled corticosteroids?
a. Oropharyngeal candidiasis
b. Increased body mass
c. Arterial hypertension
d. Osteoporosis
e. Subcapsular cataract

6. After a physical exertion, a patient developed an angina pectoris attack caused by myocardial ischemia. What definition most accurately describes the concept of ischemia?
a. Increased oxygen delivery to tissues
b. Discrepancy between the blood supply to the tissues and the need for it
c. Dilation of arterioles
d. Decreased erythrocyte count in the blood
e. Oxygen deficiency in the circulatory system

7. Different structures of the bacterial cell perform different special functions. This component provides the adaptive capabilities of the bacterium and its protection against the adverse conditions of the environment. What component is it?
a. Capsule
b. Flagella
c. Cilia
d. Spores
e. Inclusions

8. Which one of the listed compounds belongs to conjugated dienes?
a. CH_2=CH-CH_2-CH=CH_2
b. CH_2=CH-C(CH_3)_2-CH=CH_2
c. CH_2=C=CH-CH_2-CH_3

d. $CH_2=CH-CH=CH-CH_3$
e. $CH_2=C=CH_2$

9. What solution is used to determine the mass-volume fraction of ammonia in a solution?
a. Sodium hydroxide solution
b. Sulfuric acid solution
c. Hydrochloric acid solution
d. Iodine solution
e. Potassium permanganate solution

10. What cations belong to the IV analytical group according to the acid-base classification?
a. Calcium, strontium, barium, potassium, bismuth
b. Sodium, potassium, ammonium, silver, lead
c. Aluminum, zinc, chromium(II), tin(II), tin(IV), arsenic(III), arsenic(V)
d. Silver, lead, nickel, potassium, barium, bismuth
e. Magnesium, calcium, strontium, barium

11. Many serological reactions require strictly aseptic conditions. What method of sterilization is optimal for decontamination of laboratory glassware?
a. Tyndallization
b. Dry heat
c. Calcination
d. Filtration
e. Pasteurization

12. A man has undergone a course of radiotherapy and chemotherapy. The drug complex included 5-fluorodeoxyuridine that is an inhibitor of thymidylate synthase. This drug blocks the synthesis of a certain substance. What substance is it?
a. DNA
b. tRNA
c. mRNA
d. Protein
e. rRNA

13. Plantago major inflorescence grows at the apex, its rachis is long, with sessile flowers. Name this type of inflorescence:
a. Spadix
b. Capitulum
c. Thyrse
d. Panicle
e. Spike

14. In common corn (Zea mays), male spikelets are gathered in an apical panicle and female flowering spikelets form dense axillary spadices. What type of plant is Zea mays?
a. Monandrous
b. Polyecious
c. Monoecious
d. Unisexual
e. Dioecious

15. The patient, who suffers from rheumatoid arthritis and concomitant duodenal ulcer should be prescribed a non-steroidal anti-inflammatory drug. What drug is most suitable in this case?
a. Diclofenac sodium
b. Acetylsalicylic acid
c. Metamizole
d. Celecoxib
e. Paracetamol

16. After eating strawberries, a child developed itchy red spots on the skin (urticaria). What type of

leukocytosis would be detected in this child?
a. Monocytic
b. Basophilic
c. Eosinophilic
d. Neutrophilic
e. Lymphocytic

17. Select a nucleophile among the particles and molecules given below.
a. CH_3Cl
b. AlCl_3
c. ddotNH_3
d. NO_2^+
e. H^+

18. When harvesting herbal raw material of calendula and chamomile, their inflorescences are being collected. What type of inflorescence is it?
a. Round capitulum
b. Spike
c. Flat capitulum
d. Umbel
e. Corymb

19. In what pair of substances the both of them form a precipitate of metallic silver when Tollens reagent is added (during heating)?
a. Propanol and formic acid
b. Propanal and acetic acid
c. Propanal and formic acid
d. Ethanol and formic acid
e. Acetic acid and formic acid

20. One hour after a child took polyvitamins in the dosage form of a syrup, the child developed a markedly itching urticaria-type rash all over the body. What type of allergic response can be characterized by this sign?
a. Immune complex
b. Cytotoxic
c. Anaphylactic
d. Autoallergic
e. Delayed-type hypersensitivity

21. Total content of chloride, bromide, and iodide ions in the investigated solution can be quantitatively determined with the following titrant:
a. Sodium thiosulfate solution
b. Sodium nitrite solution
c. Silver nitrate solution
d. Potassium permanganate solution
e. Potassium dichromate solution

22. A person has been stung by a bee. The stung area developed redness and edema. What is the main mechanism of edema development?
a. Decreased oncotic blood pressure
b. Decreased osmotic blood pressure
c. Disturbed lymphatic efflux
d. Increased permeability of the \\ capillaries
e. Increased hydrostatic blood pressure

23. A human is immune to the plague of cattle and dogs. What type of immunity is it?
a. Natural active
b. Artificial active
c. Natural passive

d. Artificial passive
e. Innate

24. What reagents produce a reaction that follows the free radical (SR) mechanism?
a. Benzene and chlorine in the presence of $AlCl_3$
b. Ethanol and hydrogen chloride
c. Ethane and chlorine in the light
d. Ethane and oxygen
e. Ethylene and chlorine

25. In the course of an experiment in the mesenteric vein of a toad a trombus was created with a crystal of common salt. What processes occurred during the first stage of trombus formation?
a. Production of fibrin polymer
b. Production of active thromboplastin
c. Production of thrombin
d. Adhesion, aggregation, agglutination of platelets
e. Production of fibrin monomer

26. Яким методом здійснюють кількісне визначення вісмуту в препараті?
a. Перманганатометрії
b. Меркуриметрії
c. Йодометрії
d. Комплексонометрії
e. Аргентометрії

27. Interferons are natural antiviral and antitumor agents. What is their mechanism of action?
a. Transcription activation
b. Protein synthesis depression
c. Protein synthesis increase
d. Replication activation
e. Repair activation

28. What type of fruit is characteristic of Atropa belladonna?
a. Capsule
b. Silique
c. Berry
d. Hesperidium
e. Legume

29. Gastric herbal tea contains oval brown lignified "cones" up to 1.5 cm long, which are:
a. Cupressus cones
b. Platycladus orientalis cones
c. Juniperus galbuli
d. Alnus infructescences
e. Larix cones

30. A patient developed neuritis of the facial nerve after five months of tuberculosis treatment. What drug has caused this side effect?
a. Para-aminosalicylate sodium
b. Benzylpenicillin sodium
c. Rifampicin
d. Ceftriaxone
e. Isoniazid

31. Various types of immunobiological agents are used for immunoprophylaxis of infectious diseases. What type of prophylaxis involves the use of immune sera and gamma globulins?
a. Specific passive
b. Non-specific
c. Immunotropic

d. Specific active
e. General

32. До якого класу сполук належить Цитохром Р450?
a. Нуклеопротеїн
b. Ліпопротеїн
c. Флавопротеїн
d. Піридинопротеїн
e. Гемопротеїн

33. During the assessment of air purity in an aseptic unit of a phamacy, sedimentation analysis resulted in growth of small colonies with areas of hemolysis. What medium was used for inoculation in this case?
a. Endo agar
b. Blood agar
c. Ploskirev agar
d. Egg-yolk salt agar
e. Levine formulation (eosin methylene blue agar)

34. An elderly patient suffers from constipation caused by colon hypotonia. What drug should be prescribed?
a. Sodium sulfate
b. Novocainamide (Procainamide)
c. Castor oil
d. Bisacodyl
e. Atropine sulfate

35. Glycyrrhiza glabra L., a valuable medicinal plant, is widely used in official and folk medicine. What part of the plant is harvested?
a. Leaves
b. Seeds
c. Inflorescences
d. Grass
e. Roots with rhizomes

36. A patient was prescribed losartan for treatment of arterial hypertension. What mechanism of action does this drug have?
a. Inhibition of phosphodiesterase
b. Calcium channel blockade
c. Angiotensin-receptor blockade
d. Inhibition of angiotensin-converting enzyme
e. Activation of central α-adrenoceptors

37. Select ketose from the monosaccharides listed below:
a. Ribose
b. Mannose
c. Fructose
d. Glucose
e. Arabinose

38. Coumarins, vitamin K antagonists, suppress the processes of blood coagulation. Synthesis of what protein is blocked by coumarins?
a. Albumin
b. Gamma globulin
c. Ceruloplasmin
d. Prothrombin
e. Transferrin

39. An analytical chemist performs a qualitative analysis of cations that belong to the sixth analytical

group. If nickel ions are processed with Chugaiev's reagent (dimethylglyoxime), a colored compound is produced. What is the color of the resulting compound?

a. Blue
b. Violet
c. Red
d. Green
e. Yellow

40. Having examined the patient, the doctor made a diagnosis of tick-borne encephalitis. What is the route of transmission of this disease?

a. Fecal-oral
b. Airborne-droplet
c. Vertical
d. Vector-borne
e. Parenteral

41. A patient has been warned that the medicine prescribed to him can cause a cough. Name this medicine:

a. Clophelin (Clonidine)
b. Metoprolol
c. Phenyhydin (Nifedipine)
d. Dichlothiazide (Hydrochlorothiazide)
e. Lisinopril

42. A solution contains calcium, barium, aluminium, potassium, and sodium cations. Into this solution a small amount of ammonium hydroxide and alizarin solution was added, which resulted in production of red precipitate. What ion was detected as the result of this reaction?

a. Potassium
b. Barium
c. Aluminium
d. Calcium
e. Sodium

43. What value determines the degree to which foreign ions can influence the potential of an ion-selective electrode?

a. Activity coefficient
b. Electrical conductivity \\ coefficient
c. Osmotic coefficient
d. Diffusion coefficient
e. Selectivity coefficient

44. What type of indicators is used in the acid-base method of quantitative analysis?

a. Metallochromic indicators
b. Chemiluminescent indicators
c. Adsorption indicators
d. pH indicators
e. Redox indicators

45. The therapeutic properties of activated charcoal are due to its large specific surface area. Name the phenomenon, when gas absorption occurs only at the surface of a solid object:

a. Recuperation
b. Desorption
c. Adsorption
d. Adhesion
e. Cohesion

46. A man has a nitrate poisoning. What type of hypoxia will develop in this case?

a. Hypoxic hypoxia
b. Hemic hypoxia

c. Respiratory hypoxia
d. Tissue hypoxia
e. Circulatory hypoxia

47. When a galvanic cell operates under standard conditions, the chemical energy of the redox process transforms into the following type of energy:
a. Mechanical energy
b. Thermal energy
c. Nuclear energy
d. Electromagnetic energy
e. Electrical energy

48. During harvesting of a herbal raw material (belladonna), the plants had burns and patches of withering and rot. What microorganisms cause this kind of damage in plants?
a. Viroids
b. Mycoplasma
c. Protozoa
d. Viruses
e. Microfungi

49. Hyperlipemia can be observed in 2--3 hours after eating fatty food. 9 hours later lipid content normalizes again. How can this condition be characterized?
a. Hypertrophic obesity
b. Retention hyperlipemia
c. Hyperplastic obesity
d. Transport hyperlipemia
e. Alimentary hyperlipemia

50. Для представників якої родини характерні такі ознаки: плівчасті прилистки зростаються в розтруб, плід псевдомонокарпний горіхоподібний?
a. Brassicaceae
b. Lamiaceae
c. Fabaceae
d. Rosaceae
e. Polygonaceae

51. Pathogenic bacteria in the human body can form structures that protect them from phagocytosis. Name these structures.
a. Inclusions
b. Capsule
c. Flagella
d. Mesosomes
e. Spores

52. What drug is a non-selective beta-blocker?
a. Metoprolol
b. Prozerin (Neostigmine)
c. Anaprilin (Propranolol)
d. Atropine
e. Adrenaline hydrochloride

53. Preparations of colloid silver -- Protargol (silver proteinate) and Collargol (colloid silver) -- contain proteine compounds besides their active substance. What is the function of proteins in these preparations?
a. Decreased side effects
b. Improved preparation technology
c. Increased bactericidal action of \\ silver
d. Increased storage time
e. Protection of colloid solution against coagulation

54. For the symptomatic treatment of diarrhea, the doctor prescribed the patient a drug that inhibits intestinal peristalsis after making sure that the patient's diarrhea was of non-infectious origin. What drug was prescribed in this case?

a. Loperamide
b. Augmentin (Co-amoxiclav)
c. Dexamethasone
d. Mannitol
e. Thiamine

55. What common property of cation compounds Al^{3+, Zn^{2+, Cr^{3+, Sn^{2+ unites them within the IV analytical group (acid-base classification)?

a. Solubility of hydroxides in an excess ammonia solution
b. Solubility of hydroxides in acids
c. Amphotericity of hydroxides
d. Insolubility of salts in water
e. Good solubility of some salts

56. A patient, who has been suffering from chronic glomerulonephritis for the last 4 years, presents with a large amount of protein (4g/L) that appeared in the urinalysis. The levels of triglycerides and cholesterol increased in the patient's blood. What syndrome has complicated the course of the main disease in this case?

a. Toxic
b. Hypertensive
c. Inflammatory
d. Asthenic
e. Nephrotic

57. Synthesis of a medicinal substance occurs in an isolated system. What is a direction criterion of spontaneous processes?

a. Entropy change
b. Intrinsic energy
c. Gibbs energy
d. Helmholtz energy
e. Enthalpy

58. What parameter takes into account the deviation of the properties of a real solution from an ideal one?

a. Isotonic coefficient
b. Fugacity
c. Concentration
d. Activity
e. Degree of dissociation

59. The mechanism of action of hormones depends on their chemical nature. What hormones can penetrate the membrane and bind with intracellular receptors?

a. Catecholamines
b. Insulin and glucagon
c. Tropic hormones
d. Oxytocin and vasopressin
e. Steroid and thyroid hormones

60. During examination it appeared that the patient's sclera and oral mucosa are icteric. What biochemical blood value can be expected to be increased?

a. Cholesterol
b. Bilirubin
c. Glucose
d. Albumin
e. Amylase

61. Sulfanilamides contain a primary aromatic amino group in their structure. What method is used for quantitative determination of these compounds?

a. Dichromatometry
b. Iodometry
c. Cerimetry
d. Nitritometry
e. Permanganatometry

62. В яких структурах рослинних клітин накопичується вторинний крохмаль?

a. Вакуолях
b. Олеопластах
c. Протеопластах
d. Мітохондріях
e. Амілопластах

63. To determine the qualitative content of a drug, a sample of the analyte solution was processed with 2M solution of HCl. A white precipitate, soluble in aqueous ammonia solution, was formed. This analytical effect indicates the presence of the following cations:

a. Mercury(II) cations
b. Silver(I) cations
c. Tin(II) cations
d. Mercury(I) cations
e. Lead(II) cations

64. What type of cardiac arrhythmia occurs as a result of simultaneous disruption of excitability and conduction functions?

a. Sinus tachycardia
b. Atrioventricular block
c. Extrasystole
d. Respiratory arrhythmia
e. Atrial fibrillation

65. In cases of severe pancreatitis, physicians usually prescribe the drugs that help prevent pancreatic autolysis. These drugs inhibit the following type of enzymes:

a. Proteases
b. Lipases
c. Phosphatases
d. Dehydrogenases
e. Amylases

66. A patient has been diagnosed with acute pancreatitis. For diagnostic purposes, it is necessary to measure the activity of a certain enzyme in the patient's blood. What enzyme is it?

a. Creatine kinase
b. Aldolase
c. Pepsin
d. Amylase
e. Lactate dehydrogenase

67. A study of the microbiological purity of tablet formulations is conducted on the production site. After cultivating samples on mannitol salt agar, golden-yellow colonies grow up. Microscopic examination of colonies establishes the presence of gram-positive bacteria of spherical shape, located in clusters; microorganisms has the ability to coagulate the plasma. The pure culture of which of the following bacteria is discovered?

a. Pseudomonas aeruginosa
b. Enterobacteriaceae
c. Staphylococcus aureus
d. Staphylococcus saprophyticus
e. Staphylococcus epidermidis

68. What physico-chemical method is used to determine the pH of solutions for injections?
a. Conductometry
b. Potentiometry
c. Electrolysis
d. Amperometry
e. Polarography

69. What cation can be detected with Chugaiev's agent (Dimethylglyoxime)?
a. Ca^{2+
b. Ni^{2+
c. K^+
d. Mn^{2+
e. Co^{2+

70. Which of the listed plants is a bush with imparipinnate leaves, decussate leaf arrangement, and juicy black fruits?
a. Arctostaphylos uva-ursi
b. Ledum palustre
c. Urtica dioica
d. Sambucus nigra
e. Chelidonium majus

71. There are certain patterns of chemical and biological processes occurring with the drug in the body. Reduced absorption of tetracycline when it is co-administered with antacids is an example of:
a. Functional antagonism
b. Pharmaceutical incompatibility
c. Pharmacodynamic incompatibility
d. Synergism
e. Pharmacokinetic incompatibility

72. What is the mechanism of action of beta-lactam antibiotics?
a. Inhibition of DNA gyrase
b. Inhibition of protein synthesis \\ in ribosomes
c. Inhibition of cytoplasmic \\ membrane synthesis
d. Inhibition of cell wall synthesis
e. Disruption of DNA synthesis

73. Sclerenchyma fibers, formed by procambium or parenchyma around vascular bundles or secretory cavities, strengthen and protect them. What type of fibers is it?
a. Pericyclic fibers
b. Xylem fibers
c. Perivascular fibers
d. Cortical fibers
e. Phloem fibers

74. Який вид лікарських речовин належить до групи бур'янів?
a. Convallaria majalis
b. Papaver somniferum
c. Plantago major
d. Mentha piperita
e. Salvia officinalis

75. Який механізм інгібіторної дії неостигміну (прозерину)?
a. Ковалентне зв'язування з субстратом ферменту
b. Конкуренція з ацетилхоліном за активний центр фермента
c. Ковалентне зв’язування поза активним центром фермента
d. Окиснення іона заліза в активном у центрі фермента
e. Денатурація фермента

76. What reference electrode can be used in the potentiometric analysis of a medicinal substance?
a. Quinhydrone electrode
b. Zinc electrode
c. Glass electrode
d. Silver chloride electrode
e. Antimony electrode

77. Corolla of a zygomorphic hermaphroditic flower consists of 5 petals: the largest one is called the banner, the two lateral petals are called the wings, and the two fused petals are forming the keel. Such corolla is characteristic of medicinal plants of Leguminosae family. Name the type of corolla:
a. Tubular
b. Labiate
c. Papilionaceous
d. Saucer-shaped
e. Funnelform

78. Preventive examination revealed an enlargement of the patient's thyroid gland, exophthalmos, high body temperature, and an elevated heart rate of 110/min. What hormone levels should be measured in the patient's blood in this case?
a. Insulin
b. Cortisol
c. Thyroxine
d. Testosterone
e. Glucagon

79. A patient suffers from intense cough with production of viscous sputum. What drug can thin the sputum and facilitate expectoration?
a. Butamirate
b. Acetylcysteine
c. Codeine phosphate
d. Glaucine
e. Prenoxdiazine

80. The main mechanism of ammonia neutralization in the body is the biosynthesis of urea. The cycle of urea synthesis begins with the formation of a certain high-energy compound. What high-energy compound is it?
a. Fumaric acid
b. Argininosuccinate
c. Carbamoyl phosphate
d. Arginine
e. Citrulline

81. До якого виду хроматогафії відносять метод газорідинної хроматографії?
a. Афінної
b. Іоннобмінної
c. Гель-хроматографії
d. Адсорбційної
e. Розподільної

82. A woman, who works at a factory that produces phenylhydrazine, came to a hospital with complaints of general weakness, dizziness, and drowsiness. Her blood has signs of anemia with high levels of reticulocytosis, anisocytosis, and poikilocytosis; isolated normocytes are present in the woman's blood. What type of anemia is it?
a. Iron-deficiency anemia
b. Protein-deficiency anemia
c. Aplastic anemia
d. Metaplastic anemia
e. Hemolytic anemia

83. Early-flowering rhizomatous ephemeroids include: Tussilago farfara, Convallaria majalis, and:

a. Adonis vernalis
b. Chamomilla recutita
c. Allium cepa
d. Thymus serpyllum
e. Carum carvi

84. Etiological factors of infectious diseases can be infectious agents with diverse ultrastructure. Which of the following groups does not have cellular structure, protein synthesis, enzymatic and energy systems?

a. Bacteria
b. Viruses
c. Rickettsia
d. Fungi
e. Protozoa

85. How many stereoisomeric aldohexoses exist?

a. 2
b. 8
c. 6
d. 4
e. 16

86. Vitamins can enhance each other's effects, when taken simultaneously. What vitamin potentiates the activity of vitamin P?

a. C
b. B_1
c. D
d. A
e. B_2

87. What reaction can be classified as a pseudo-first-order reaction?

a. Neutralization
b. Etherification
c. Combustion
d. Hydrolysis of sucrose
e. Saponification

88. A patient with Cushing syndrome has persistent hyper- \\ glycemia and glucosuria. In this case, increased synthesis and secretion of a certain hormone can be observed. What hormone is it?

a. Adrenaline
b. Thyroxine
c. Insulin
d. Glucagon
e. Cortisol

89. A 50-year-old patient in a poor condition was presented to the hospital. Objectively, the skin and visible mucous membranes are cyanotic, arterial blood saturation --- 88%, NiBP --- 90/60 mm Hg, pulse is 117 per minute, respiratory rate is 22 per minute. From the history it is known that the patient suffers from chronic heart failure. Which of the following types of hypoxia is most likely to develop in this case?

a. Tissue
b. Anemic
c. Hemic
d. Hypoxic
e. Circulatory

90. To preserve valuable varietal qualities of peppermint, the optimal method of its propagation was chosen. What method is it?

a. Germinated seeds
b. Parts of the tuber
c. Plantlets
d. Parts of the rhizome
e. Leaf cuttings

91. What hormonal drug is used in cases of atonic uterine bleeding?
a. Oxytocin
b. Prednisolone
c. Progesterone
d. Insulin
e. L-thyroxine

92. In the patient, a gallstone lodged in the common bile duct has blocked the flow of bile into the intestine. What digestive process will be disturbed in this case?
a. Absorption of proteins
b. Absorption of carbohydrates
c. Digestion of fats
d. Digestion of carbohydrates
e. Digestion of proteins

93. A 10-year-old child has height of 178 cm and body mass of 67 kg. These presentations are caused by the functional disturbance of the:
a. Gonads
b. Adrenal glands
c. Parathyroid glands
d. Thyroid gland
e. Pituitary gland

94. What drug should not be prescribed for the treatment of arterial hypertension in a patient with gout?
a. Enalapril
b. Hydrochlorothiazide
c. Cozaar (Losartan)
d. Atenolol
e. Amlodipine

95. The researcher while conducting the qualitative analysis that involves sulfates precipitation of the third analytical group cations (Ca^{2+, Sr^{2+, Ba^{2+) has to reduce solubility of sulfates. What substance should he use for this purpose?
a. Amyl alcohol
b. Chloroform
c. Ethyl alcohol
d. Benzene
e. Distilled water

96. A 55-year-old man came to a doctor with complaints of acute pain in his big toes. Meat and wine remain permanently in his diet. The doctor suspects gout. What substance must be measured in the patient's blood to confirm this diagnosis?
a. Bilirubin
b. Ketone bodies
c. Lactate
d. Urea
e. Uric acid

97. To stop a fever, the patient was prescribed a centrally acting non-narcotic analgesic that, unlike the other drugs in this group, has relatively weak anti-inflammatory effect. What drug is it?
a. Indomethacin
b. Nurofen (Ibuprofen)

c. Analgin (Metamizole)
d. Paracetamol
e. Aspirin

98. A doctor has prescribed a nonsteroidal anti-inflammatory drug to relieve inflammation and pain syndrome. Name this drug:
a. Fentanyl
b. Loratadine
c. Diclofenac sodium
d. Paracetamol
e. Glibenclamide

99. In medical practice barbiturates are used as sleeping pills. These substances act similar to rothenone and are inhibitors of tissue respiration. The mechanism of their action takes place on the enzymatic level. Which of the following enzymes do these substances inhibit?
a. Cytochrome C reductase
b. Adenosine triphosphate synthetase
c. Succinate dehydrogenase
d. NADH-coenzyme Q reductase
e. Cytochrome oxidase

100. Cosmetic cream against mimic wrinkles contains "vitamin Q10" --- ubiquinone. What is the metabolic role of this vitamin-like substance?
a. It regulates differentiation of epithelial cells
b. It stimulates collagen synthesis
c. It decreases permeability of cell membranes
d. It regulates water-salt exchange
e. It is a component of the mitochondrial respiratory chain

101. A woman in the state of ketoacidotic coma has loud rapid respiration: a labored expiration with active participation of expiratory muscles occurs after a deep inspiration. What type of pathological respiration is it?
a. Gasping
b. Kussmaul
c. Cheyne-Stokes
d. Biot
e. Stenotic

102. What substance is used as an indicator in the back titration of an aqueous solution of acetic acid?
a. Murexide
b. Diphenylamine
c. Phenolphthalein
d. Eriochrome black T
e. Diphenylcarbazone

103. According to Van't Hoff rule, when the temperature is raised by 10 degrees, the reaction rate increases by:
a. 5 times
b. 1.5 times
c. 10 times
d. Temperature does not affect reaction rate
e. 2--4 times

104. Caffeine is one of the alkaloids contained in tea and coffee. Caffeine is contraindicated in case of:
a. Depression of nervous activity
b. Hypotension
c. Migraine

d. Essential hypertension
e. Addiction

105. A patient presents with hypoxia. What metabolic process activates when oxygen supply is insufficient?
a. Anaerobic glycolysis
b. Urea cycle
c. Pentose-phosphate pathway
d. Tricarboxylic acid cycle
e. Oxidative decarboxylation of keto acids

106. On X-ray examination of the 59-year-old patient, in the lower lobe of the right lung there was detected a distinct shadow, differential for tumor. It was pre-determined that the tumor is benign. Which of the following features characterizes the tumor as benign?
a. Invasion in surrounding tissues
b. Expansive growth
c. Infiltrating growth
d. Metastasis
e. Cancer cachexia

107. The patient is presented to the hospital with the phenomena of growing respiratory failure. He has clinical signs of bilateral subtotal pneumonia. The clinical diagnosis is confirmed by X-ray examination. What type of respiratory failure does this patient most likely have?
a. Thoracic diaphragm
b. Restrictive
c. Central
d. Peripheral
e. Obstructive

108. Microscopy shows that basidia with basidiospores are formed on the hymenium. What division do these fungi belong to?
a. Zygomycota
b. Lychenophyta
c. Chytridiomycota
d. Ascomycota
e. Basidiomycota

109. What has an effect on the coagulating action of the coagulant ion, according to the Schulze-Hardy rule?
a. Ionic charge
b. Adsorbability
c. Hydration ability
d. Ionic size
e. Polarization

110. A 53-year-old person has been admitted into the gastroenterology department with complaints of dyspeptic disorders and melena. Objectively, the patient has splenomegaly, ascites, and dilated superficial veins of the anterior abdominal wall. What syndrome can be characterized by these signs?
a. Portal hypertension
b. Suprahepatic jaundice
c. Acholia
d. Cholemia
e. Arterial hypotension

111. A child had been administered antidiphtheric serum. What resistance was formed in the child?
a. Pathologic
b. Primary
c. Active
d. Passive

e. Physiological

112. Який препарат належить до групи блокаторів Н2 – гістамінових рецепторів?
a. Фамотидин
b. Гастроцепін
c. Алохол
d. Альмагель
e. Омепразол

113. The biological study of spores and pollen revealed tetrahedral spores with a semi-circular base and reticular surface in the pollen. There spores belong to:
a. Lycopodiophyta
b. Equisetiphyta
c. Polypodiophyta
d. Bryophyta
e. Pinophyta

114. A patient, who was prescribed famotidine for peptic ulcer disease, came to a pharmacy. What mechanism underlies the action of this medicine?
a. Muscarinic cholinoreceptor blockade
b. Cholinergic receptors blockade in the sympathetic ganglia
c. H_1-histamine receptors blockade
d. H_2-histamine receptors blockade
e. Inhibition of the H^+K^+ ATPase activity

115. Який із патогенетичних факторів відіграє провідну роль у розвитку набряків у пацієнтів після тривалого голодування?
a. Зниження гідростатичного тиску крові
b. Зниження онкотичного тиску крові
c. Зниження осмотичного тиску крові
d. Підвищення осмотичного тиску інтерстиціальної рідини
e. Підвищення онкотичного тиску в тканинах

116. A woman with hypertension came to a doctor complaining of dry cough that developed against the background of her therapy. What antihypertensive drug was she taking?
a. Dichlothiazide (Hydrochlorothiazide)
b. Atenolol
c. Furosemide
d. Nifedipine
e. Lisinopril

117. During photosynthesis within plant cell chloroplasts there is short-term retained starch being produced, which rapidly hydrolyzes into glucose. This starch is called:
a. Secondary
b. Reserve
c. Resistant
d. Primary
e. Transitory

118. In snake venom there is a substance that causes erythrocyte hemolysis when it is introduced into a human organism. Blood test revealed a large amount of lysolecithin (lysophosphatidylcholine). What enzyme leads to accumulating lysolecithin in blood?
a. Phospholipase A1
b. Phospholipase D
c. Phospholipase C
d. Neuraminidase
e. Phospholipase A2

119. To what electrode will the protein particle move during electrophoresis, if its isoelectric point is

4.0 and the pH of the solution is 5.0?

a. To the cathode
b. There will be no movement
c. To the anode
d. First to the cathode, and then to the anode
e. First to the anode, and then to the cathode

120. Name the ability of high-molecular compounds to prevent precipitation of lyophobic sols and deposition of cholesterol plaques on the vessel walls:

a. Sedimentation
b. Coacervation
c. Colloid protection
d. Coagulation
e. Thixotropy

121. Для яких систем характерна седиментація?

a. Розчинів електролітів
b. Золів
c. Розчинів ВМР
d. Суспензій
e. Розчинів неелектролітів

122. In order to facilitate usage and achievement of necessary therapeutic effect, the drug or medicinal plant material is given a certain dosage form. Indicate the dosage form in the form of a free-disperse system:

a. Emulsion
b. Gel
c. Membrane
d. Jelly
e. Diaphragm

123. Який пігмент утворюється в реакції окиснення гему?

a. Стеркобіліноген
b. Уробіліноген
c. Каротин
d. Хлорофіл
e. Білівердин

124. The presence of antibodies to HIV has been established in the analyzed serum by means of enzyme-linked immunosorbent assay. What method or reaction must be used to confirm the diagnosis of AIDS?

a. Biological method
b. Immunoblotting
c. Bacteriological method
d. Virological method
e. Immunofluorescence

125. What adsorbent is used as a suspension to relieve the intoxication caused by alkaloid poisoning?

a. Activated charcoal
b. Bentonite
c. Silica gel
d. Kaolin
e. Starch

126. Microscopy of the smears obtained from the coating on the patient's tonsils was stained according to the Neisser technique. The staining revealed thin yellow bacilli with dark blue grains at their ends, arranged in the form of the Roman numeral V. What pathology can be suspected based on the results of microscopy?

a. Pertussis

b. Influenza
c. Diphtheria
d. Tuberculosis
e. Measles

127. Action of a number of drugs is based on the effect of competitive inhibition of enzyme activity. Name its characteristic feature.
a. Inhibitor is a structural analogue of the substrate
b. Inhibition degree does not depend on the substrate concentration
c. Inhibitor forms strong covalent bonds with the active site of the enzyme
d. Inhibitor has no effect on the enzyme's affinity for its substrate
e. Inhibitor is a structural analogue of the enzyme

128. У чоловіка з діагнозом: цукровий діабет виявили такі показники артеріальної крові: pH крові – 7,25, pCO2 – 37 мм рт. ст., SB – 19,5 ммоль/л, BB – 39 ммоль/л, BE – (-7) ммоль/л, кетонові тіла крові – 1,9 ммоль/л, титраційна кислотність сечі – 50 ммоль/добу. Яке порушення кислотно-основного стану у пацієнта?
a. Змішаний алкалоз
b. Змішаний ацидоз
c. Газовий ацидоз
d. Газовий алкалоз
e. Метаболічний ацидоз

129. A drug solution sterilized by means of boiling was tested for sterility. Inoculation on Kitt-Tarozzi medium revealed clostridia. Clostridia survived the boiling because they are:
a. Acid-fast
b. Prototrophic
c. Anaerobic
d. Thermophilic
e. Spore-formers

130. A patient demonstrates symmetrical dermatitis on the palms. A doctor made a diagnosis of pellagra. What vitamin deficiency can result in such symptoms?
a. Cobalamin
b. Nicotinic acid
c. Ascorbic acid
d. Folic acid
e. Cholecalciferol

131. In the process of creating vaccines, pathogens of infectious diseases are being attenuated. What is the essence of the attenuation process?
a. Isolation of protective antigens from microbial cells
b. Artificial reduction of virulent properties of pathogens
c. Discovering antigenic determinants of the main antigens of the pathogen
d. Inactivation of pathogens while preserving the antigenic structure of cells
e. Reduction of immunogenicity of the pathogen

132. A man developed agranulocytosis after pneumonia treatment with sulfonamides. Antibodies to neutrophils were detected in the patient's blood. This pathology belongs to the following type of allergic reactions:
a. Reactive
b. Immune complex
c. Cytotoxic
d. Cell-mediated
e. Anaphylactic

133. What drug has a hypoglycemic effect due to stimulation of pancreatic beta cells?
a. Prednisolone
b. Adrenaline hydrochloride (epinephrine)

c. Glibenclamide
d. Heparin
e. Retabolil (nandrolone)

134. A patient with gingivitis was prescribed oral cavity irrigation with 0.02% potassium permanganate solution. What group of antiseptics does this drug belong to?
a. Detergents
b. Alcohols
c. Oxidants
d. Dyes
e. Nitrofurans

135. What reagent can be used to distinguish maltose (a reducing disaccharide) from sucrose (a non-reducing disaccharide)?
a. Br_2
b. $NaOH$
c. $FeCl_3$
d. Tollens reagent
e. $K_4[Fe(CN_6)]$

136. Proteins are the catalysts of biochemical processes. What type of homogeneous catalysis includes the processes with their participation?
a. Redox catalysis
b. Enzyme catalysis
c. Acid-base catalysis
d. Coordination catalysis
e. Gas-phase homogeneous catalysis

137. The student is studying a plant organ with radial symmetry, unlimited growth and positive geotropism. It provides nourishment, vegetative reproduction and plant fastening in the soil. Which of the following is described?
a. Rhizome
b. Seed
c. Root
d. Leaf
e. Stem

138. The bacterial culture obtained from a patient does not grow when exposed to oxygen. Conditions suitable for bacterial culture growth can be created in:
a. Serum-supplemented medium
b. Pasteur oven
c. Anaerobic culture jar
d. Krotov apparatus
e. Oxidative medium

139. What family of viruses has a unique reverse transcriptase enzyme?
a. Picornaviruses
b. Flaviviruses
c. Togaviruses
d. Retroviruses
e. Reoviruses

140. In medicine and pharmacy, such phenomena as adsorption, wetting, adhesion, etc. can be observed. What are they called?
a. Electrokinetic phenomena
b. Optical phenomena
c. Physico-chemical phenomena
d. Molecular-kinetic phenomena
e. Superficial phenomena

141. CH_3-CH_2-OH and CH_3-O-CH_3 are a pair of compounds that can be classified as isomers of the following type:

a. Tautomers
b. Carbon chain isomers
c. Geometric (cis-trans) isomers
d. Mirror (optical) isomers
e. Functional group isomers

142. Select the halogenated antiseptic that would be preferable for a child to pack in the first aid kit, when going to a summer camp:

a. Brilliant green
b. Copper sulfate
c. Iodine alcoholic solution
d. Methylene blue
e. Formaldehyde solution

143. What cardiac glycoside is obtained from lily of the valley?

a. Celanid (Lanatoside C)
b. Digitoxin
c. Strophanthin K
d. Corglycon
e. Adoniside

144. Water samples were received by a bacteriological laboratory for determining their coli index. What is the coli index?

a. Number of Escherichia coli in 1 liter of water
b. Number of enterococci in 1 liter of water
c. Number of coliphages in 1 liter of water
d. Number of pseudomonads in 1 liter of water
e. Number of staphylococci in 1 liter of water

145. What titrimetric method of analysis uses both external and internal indicators?

a. Argentometry
b. Alkalimetry
c. Complexonometry
d. Nitritometry
e. Permanganatometry

146. Reaction of sodium ions with potassium hexahydroxoantimonate (V) in a neutral medium produces precipitate. Specify the color of this precipitate:

a. Red
b. Blue
c. Yellow
d. White
e. Green

147. Thiocyanatometric titration method requires secondary standard solution of potassium thiocyanate that is standardized with standard solution of:

a. Iron (II) sulfate
b. Sulfuric acid
c. Copper (II) nitrate
d. Silver nitrate
e. Hydrochloric acid

148. Rhizome of a species belonging to the Asteraceae family is polycephalous, succulent, has lysigenous cavities, accumulates inulin. Such underground organ is characterisic of:

a. Hyoscyamus niger
b. Helianthus annuus
c. Inula helenium

d. Digitalis grandiflora
e. Sorbus aucuparia

149. The majority of live vaccines are made from microbes with reduced virulence. What is the name of such vaccines?
a. Denatured vaccines
b. Adjuvant vaccines
c. Attenuated vaccines
d. Anatoxin vaccines
e. Adsorbed vaccines

150. Який збудник викликає захворювання сифіліс?
a. Corynebacterium diphtheriae
b. Treponema pallidum
c. Borrelia recurrentis
d. Mycobacterium tuberculosis
e. Salmonella typhi

151. What cation of the third analytical group can be precipitated using the group reagent H_2SO_4 only in the presence of ethanol (binds water and concentrates the solution)?
a. Ca^2+
b. Na^+
c. Ba^2+
d. K^+
e. Sr^2+

152. Первинні та вторинні нітроалкани є таутомерними сполуками. Яка таутомерія характерна для них?
a. Аміно-імінна
b. Аци-нітротаутомерія
c. Азольна
d. Лактам-лактимна
e. Кето-енольна

153. Under conditions of prolonged intoxication, a significant decrease in the activity of aminoacyl-tRNA synthetases can be observed. What metabolic process is disrupted in this case?
a. DNA repair
b. Genetic recombination
c. RNA processing
d. DNA replication
e. Protein biosynthesis

154. Essential oils are used both in pharmaceutical and cosmetic industry. To extract essential oils from herbal raw material the following technology is used:
a. Conductometry
b. Calorimetry
c. Potentiometry
d. Colorimetry
e. Steam distillation

155. Total protein in blood serum is one of metabolic indicators. What test is usually used in clinical laboratories to determine this value?
a. Lead acetate test
b. Xanthoproteic test
c. Sodium nitroprusside test
d. Biuret test
e. Ninhydrin test

156. The fruit is a bright-red juicy follicetum with a sweet-sour taste. Its seeds are kidney-shaped and

smell similar to lemon. Such fruits belong to:
a. Malus domestica
b. Schisandra chinensis
c. Citrus limon
d. Sorbus aucuparia
e. Viburnum opulus

157. Helmholtz energy is the direction criterion of an arbitrary process at a constant:
a. Entropy and volume
b. Temperature and volume
c. Temperature and pressure
d. Entropy and pressure
e. Internal energy and volume

158. What enzyme allows for synthesys of various genes from template RNA to DNA in genetic engineering (this enzyme catalyzes the process observed in RNA-viruses)?
a. Helicase
b. DNA-ligase
c. Endonuclease
d. Reverse transcriptase
e. Exonuclease

159. What tissue can be characterized by permeable cells located within the root of the primary structure?
a. Endodermis
b. Pericycle
c. Exodermis
d. Central axial cylinder
e. Mesodermis

160. A patient has been hospitalized with signs of carbon monoxide poisoning. What type of hypoxia is characteristic of this condition?
a. Hypoxic hypoxia
b. Hemic hypoxia
c. Tissue hypoxia
d. Respiratory hypoxia
e. Circulatory hypoxia

161. What drug inhibits cholesterol synthesis in the liver?
a. Atorvastatin
b. Probucol
c. Fenofibrate
d. Parmidinum
e. Colestipol

162. During the analysis of the cations that belong to the fourth analytical group (acid-base classification), their processing with a group reagent makes it possible not only to separate, but also to identify the following ions:
a. Sn(IV) ions
b. Cr(III) ions
c. Zn(II) ions
d. As(III) ions
e. Al(III) ions

163. Який патогенез розвитку цукрового діабету 1-го типу?
a. Гіперпродукція соматотропіну
b. Гіперпродукція глюкагону
c. Гіперпродукція кортизолу
d. Аутоімунне ушкодження В-клітин

e. Інсулінорезистентність жирової тканини

164. In the process of asexual reproduction, higher spore-forming plants have the ability to form spores, which is an adaptation to life on dry land. What set of chromosomes do their spores have?
a. Haploid
b. Diploid
c. Tetraploid
d. Triploid
e. Polyploid

165. Salts and esters of oxalic acid are called:
a. Oxalates
b. Succinates
c. Malonates
d. Adipinates
e. Urates

166. Which compound of those listed below is an alicyclic hydrocarbon?
a. Phenanthrene
b. Benzene
c. Naphthalene
d. Anthracene
e. Cyclohexene

167. The third analitycal group of cations (acid-base classification) includes Ca^{2+, Sr^{2+, Ba^{2+. What acid can function as a precipitator agent (group reagent) for these cations?
a. HNO_3
b. HCl
c. H_2SO_4
d. $HClO_4$
e. CH_3COOH

168. Від якого показника залежть коагулююча здатність електроліту?
a. Заряду іона-коагулятора
b. Концентрації електроліту
c. Об’єму золю
d. Ступеня дисперсності золю
e. Густини золю

169. What pair of compounds can be classified as functional group isomers?
a. Butane and isobutane
b. Hexane and cyclohexane
c. Pentene-1 and pentene-2
d. Propanal and propanone
e. Benzene and methylbenzene

170. A patient with gout has been prescribed allopurinol. What is the mechanism of action of this drug?
a. Inhibition of COX-2 enzyme
b. Activation of microsomal oxidation in the liver
c. Intensification of uric acid excretion by the kidneys
d. Inhibition of xanthine oxidase enzyme, inhibition of uric acid synthesis
e. Stimulation of uric acid breakdown

171. For tetanus prevention, a toxin that has been neutralized with formalin (0.4%) at the temperature of 39°C for four weeks is used. What kind of preparation is it?
a. Inactivated vaccine
b. Immunoglobulin
c. Anatoxin

d. Antitoxic serum
e. Adjuvant

172. Cultivated annual plant with glands and indumentum has alternate obovate leaves and flat capitulum inflorescences with orange pseudoligulate ray florets and yellow tubular disc florets. Specify this plant.
a. Artemisia absinthium
b. Centaurea cyanus
c. Echinacea purpurea
d. Arctium lappa
e. Calendula officinalis

173. Osmotic pressure is an important characteristic of biological fluids. Semipermeable membranes are necessary for penetration of solvent molecules. What substance cannot be used as a semipermeable membrane?
a. Gelatine
b. Parchment
c. Glass
d. Biological membrane
e. Collodion film

174. What indicator is used, when sodium carbonate is being quantified in the preparation by means of acid-base titration?
a. Methyl orange
b. Murexide
c. Ferroin
d. Methylene blue
e. Diphenylamine

175. A local general practitioner recommends taking interferon for influenza prevention. What is the mechanism of action of this drug?
a. Prevents adsorption of virus in cell receptors
b. Inhibits virion exit from cells
c. Disrupts the process of virus assembly
d. Blocks virus protein synthesis
e. Blocks virus stripping

176. An analytical chemist conducts a qualitative analysis of cations of the second group. What reagent can be used to separate lead chloride from chlorides of other cations of the second group?
a. Sodium chloride
b. Hot water
c. Sodium hydroxide
d. Hydrochloric acid
e. Ammonia

177. After the examination, the patient was diagnosed with typhus. What is the route of transmission of this disease?
a. Vertical transmission
b. Fecal-oral transmission
c. Parenteral transmission
d. Vector-borne transmission
e. Airborne droplet transmission

178. Який основний метод лабораторної діагностики ВІЛ інфекції?
a. Радіоімунний аналіз
b. Імуноферментний аналіз
c. Реакція пасивної гемаглютинації
d. Реакція коаглютинації
e. Імунофлуоресцентний

179. A patient with an acute myocardial infarction had been receiving heparin as a component of complex therapy. After a time, the patient developed hematuria. What drug is indicated as an antidote to heparin?

a. Protamine sulfate
b. Aminocaproic acid
c. Neodicoumarin (ethyl biscoumacetate)
d. Vicasol (Menadione)
e. Fibrinogen

180. Which of the listed species of medicinal plants is considered to be a weed?

a. Papaver somniferum
b. Plantago major
c. Salvia officinalis
d. Convallaria majalis
e. Mentha piperita

181. A dissected flower has numerous stamens that are united by the stamen filaments into several bundles. What is this type of androecium?

a. Polyadelphous
b. Didynamous
c. Diadelphous
d. Tetradynamous
e. Monadelphous

182. A benzimidazole derivative, omeprazole, has been prescribed to a patient with a duodenal ulcer accompanied by an increased secretion of gastric juice. What is the mechanism of action of this drug?

a. Stimulation of H2-histamine receptors
b. Blockade of M1-cholinergic receptors
c. Blockade of H2-histamine receptors
d. Stimulation of H^+, K^+ -ATPase
e. Irreversible blockade of H^+, K^+ -ATPase

183. A student studies the digestive system of vertebrates. The organ that is being studied is primarily located in the right upper quadrant of the abdomen. It detoxifies various metabolites, produces hormones and digestive biochemicals, regulates glycogen storage, synthesizes proteins, and decomposes red blood cells. What organ is being studied by the student?

a. Liver
b. Pancreas
c. Kidneys
d. Heart
e. Lungs

184. The type of bacterial respiration is of great importance for the growth and reproduction of bacteria. Some species are unable to reproduce in the presence of oxygen and use sulfate respiration. What are these microorganisms called?

a. Microaerophiles
b. Facultative anaerobes
c. Obligate aerobes
d. Macroaerophiles
e. Obligate anaerobes

185. In the roots of primary structure, the nutrient reserves are stored in the:

a. Exodermis
b. Pericycle
c. Endodermis
d. Mesodermis
e. Central axial cylinder

186. People, who were indoors during a fire, suffer from a carbon monoxide poisoning. What type of

hypoxia is observed in such cases?

a. Hemic hypoxia

b. Circulatory hypoxia

c. Respiratory hypoxia

d. Hypoxic hypoxia

e. Tissue hypoxia

187. A patient complains of loss of appetite, weight loss, weakness, and abdominal pain. Laboratory blood test shows the following: Hb --- 90 g/L; erythrocytes --- $2.0 · 10^{12$/L; color index --- 1.4. B_{12} deficiency anemia has been diagnosed. What substance is deficient in this patient, causing the anemia?

a. Castle factor

b. Hydrochloric acid

c. Renin

d. Pepsin

e. Secretin

188. Який механізм передачі захворювання епідемічного висипного тифу?

a. Повітряно-крапельний

b. Трансмісивний

c. Фекально-оральний

d. Вертикальний

e. Парентеральний

189. What pharmacological effect of diazepam allows using it in the treatment of neuroses?

a. Analgesic

b. Antidepressant

c. Antipyretic

d. Anxiolytic

e. Diuretic

190. Який із нижченаведених антигіпертензивних препаратів призначається пацієнтам із бронхіальною астмою?

a. Анаприлін

b. Метопролол

c. Фармадипін

d. Надолол

e. Лабеталол

191. What is the vapor pressure of a liquid at its boiling point?

a. Equal to atmospheric pressure

b. Equal to saturated vapor pressure at room temperature

c. Minimum

d. Maximum

e. Equal to saturated vapor pressure at 273 K

192. The method consisting in removal of low-molecular impurities from colloidal systems and high-molecular compound solutions by semipermeable membrane diffusion is called:

a. Ultrafiltration

b. Dialysis

c. Decantation

d. Compensatory dialysis

e. Electrodialysis

193. In E) coli cells, the synthesis of pyrimidine nucleotides occurs according to the scheme of the metabolic pathway: $CO_2 + NH_3$ + 2ATP> S1> S2> UTP> CTP. When CTP concentration in the cell increases, the synthesis of pyrimidine nucleotides stops. What type of regulation is described here?

a. Allosteric regulation

b. Enzyme molecule phosphorylation

c. Attachment of inhibitor proteins
d. Detachment of inhibitor proteins
e. Partial proteolysis

194. In order to carry out the silver cations identification, HCl was added to the solution. Later, the formed solution was followed by adding the solution of ammonia. Specify which of the below-mentioned compounds are formed in such case?
a. $AgCl$
b. AgOH
c. $[Ag_2(NH_3)_3]Cl$
d. $[Ag(NH_3)_2]Cl$
e. $[Ag(NH_3)_3]Cl$

195. To assess the bacterial contamination of the soil, where humans or animals are the source of contamination, the presence of sanitary indicator microorganisms must be determined. What microorganism indicates old fecal contamination of the soil?
a. Pseudomonas aeruginosa
b. Clostridium perfringens
c. Escherichia coli
d. Streptococcus faecalis
e. Salmonella enteritidis

196. The second stage of detoxification involves joining certain chemical compounds with functional groups of toxins. Select one such compound:
a. Cholesterol
b. Pyruvate
c. Higher fatty acids
d. Glucose
e. Glucuronic acid

197. A patient with signs of mercury poisoning has been delivered into an admission room. What antidote should be prescribed in this case?
a. Calcium chloride
b. Naloxone
c. Unithiol
d. Proserin
e. Atropine sulfate

198. What substances can be determined by means of substitution titration using the iodometric method?
a. Strong reducing agents
b. Weak reducing agents
c. Saturated hydrocarbons
d. Strong oxidizing agents
e. Unsaturated hydrocarbons

199. Surfactants are compounds that lower the surface tension (or interfacial tension) between two liquids, between a gas and a liquid, or between a liquid and a solid. Which of the following substances exhibits the properties of a surfactant at the air-water interface?
a. HCl
b. Valeric acid
c. $NaOH$
d. Urea
e. ---

200. Який препарат належить до групи антихолінестеразних засобів?
a. Дипіроксим
b. Ацетилхолін
c. Прозерин (неостигмін)

d. Ізонітрозин
e. Дитилін (суксаметонію хлорид)

201. What transformation is accompanied by an increase in entropy?
a. CaO(solid) + CO_2(gas) = CaCO_3(solid)
b. C_2H_2(gas) + H_2(gas) = C_2H_4(gas)
c. 2H_2S (gas) + 3O_2(gas) = 2SO_2(gas) + 2H_2O(gas)
d. N_2(gas) + O_2(gas) = 2NO(gas)
e. NH_4-NO_2-(solid) = N_2(gas) + 2H_2O(gas)

202. Pastes are used in medicine to treat skin diseases. What type of disperse systems are they?
a. Aerosols
b. Suspensions
c. Foams
d. Powders
e. Emulsions

203. What reaction occurs according to the free-radical (SR) mechanism?
a. $CH_2=CH_2+Cl_2$
b. $CH_3–CH_3+O_2$
c. $C_6H_6+Cl_2$
d. $C_2H_6+Cl_2$
e. $CH_3CH_2OH+HCl$

204. Elevated levels of ketone bodies were detected in the blood of a patient with diabetes mellitus. Ketone bodies are synthesized from the following compound:
a. Malate
b. Acetyl-CoA
c. Glucose
d. Lactate
e. Succinate

205. What can be used to distinguish formic acid from acetic acid?
a. $Br_2 (H_2O)$
b. $[Ag(NH_3)_2]OH$
c. H_2SO_4
d. $NaHCO_3$
e. $NaOH$

206. To obtain exotoxins of some microorganisms, these microorganisms are inoculated into liquid nutrient medium, where microbial cultivation occurs and toxins are produced. At a certain stage it is necessary to remove the microbial cells from the medium, that is, to separate the toxins from microbes. What method should be applied in this case?
a. Autoclaving
b. Boiling
c. Bacteria-excluding filters
d. Disinfectants (chloramine)
e. Ultraviolet irradiation

207. You are studying the silvery downy plant of Asteraceae family, which is rich with essential oils and bitters. Harvested are apical sprouts with panicle of small round flower heads. This plant is:
a. Artemisia absinthium
b. Bidens tripartita
c. Calendula officinalis
d. Chamomilla recutita
e. Arctium lappa

208. Streptomycin like other aminoglycosides, by binding to the 30S subunit of ribosomes, prevents the attachment of formylmethionyl-tRNA) What process is being disrupted as a result of this effect?

a. Transcription termination
b. Translation termination
c. Translation initiation
d. Transcription initiation
e. Replication initiation

209. What drug should be prescribed to a patient with bronchospasm?
a. Insulin
b. Oxytocin
c. Bisacodyl
d. Salbutamol
e. Vicasol (Menadione)

210. Serology is the leading method of syphilis diagnostics. What test is used to diagnose this disease?
a. Wassermann test
b. Widal test
c. Wright test
d. Gruber test
e. Haddelson test

211. A person came to a doctor with complaints of loss of sensitivity and pain along the peripheral nerves. Blood testing revealed elevated levels of pyruvic acid. What vitamin can cause such changes, if it is deficient in the body?
a. Vitamin PP
b. Vitamin $B2$
c. Pantothenic acid
d. Biotin
e. Vitamin $B1$

212. In redox titrimetry, the indicators that are added to the reaction system respond to the changes in the:
a. Degree of ionization of the substance being analyzed
b. Redox potential of the system
c. Concentration of hydroxyl ions
d. Concentration of hydrogen ions
e. Ionic strength of the solution

213. За яким механізмом відбувається приєднання Br_2 до пропену?
a. S_R
b. A_N
c. S_E
d. A_E
e. S_N

214. During bacteriology of the feces of a patient with diarrhea, a pure culture of rod-shaped, slightly bent microorganisms was isolated. In the microslide, these microorganisms resemble schools of fish. Their inoculation on alkaline media (alkaline peptone water) results in formation of a blue-tinted film after 6 hours. What pathogen has such properties?
a. Salmonellae
b. Mycobacteria
c. Spirochetes
d. Vibrio cholerae
e. Escherichia coli

215. A man came to a doctor complaining of a headache, pain in the throat during swallowing, and an increase in the body temperature. He was diagnosed with tonsillitis. What changes in the patient's blood can be expected in this case?
a. Lymphocytosis

b. Eosinophilic leukocytosis
c. Neutrophilic leukocytosis
d. Basophilic leukocytosis
e. Monocytosis

216. A dry-heat box is used for sterilization of various materials and instruments in a bacteriological laboratory. This sterilization method can be applied to the following objects:
a. Glass test tubes
b. Physiological solution
c. Simple nutrient medium
d. Wire inoculating loops
e. Rubber gloves

217. Isotonicity is one of the requirements for infusion solutions. What aqueous salt solution is used in clinical practice as an isotonic solution?
a. 0.9% solution of $MgCl_2$
b. 0.85-0.90% solution of NaCl
c. 10% solution of NaCl
d. 4.5-5.0% glucose solution
e. 10% solution of $CaCl_2$

218. What stage of chronic renal failure can be characterized by metabolic acidosis, azotemia, itching, ammonia breath, and impaired functioning of vital organs?
a. Acute renal failure
b. Nephrotic syndrome
c. Renal colic
d. Uremia
e. Tubulopathy