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

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

2. 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. ---
c. Valeric acid
d. Urea
e. $NaOH$

3. What physico-chemical method is used to determine the pH of solutions for injections?

a. Conductometry
b. Electrolysis
c. Amperometry
d. Polarography
e. Potentiometry

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

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

5. 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. Pepsin
b. Hydrochloric acid
c. Renin
d. Castle factor
e. Secretin

6. What reaction occurs according to the free-radical (SR) mechanism?

a. $CH_3CH_2OH+HCl$
b. $CH_2=CH_2+Cl_2$
c. $C_6H_6+Cl_2$
d. $C_2H_6+Cl_2$
e. $CH_3–CH_3+O_2$

7. 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. Acetyl-CoA
b. Lactate
c. Malate
d. Glucose
e. Succinate

8. 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. Pancreas

b. Liver

c. Heart

d. Lungs

e. Kidneys

9. Який препарат належить до групи блокаторів Н2 – гістамінових рецепторів?

a. Фамотидин

b. Гастроцепін

c. Алохол

d. Альмагель

e. Омепразол

10. 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. Uremia

c. Tubulopathy

d. Nephrotic syndrome

e. Renal colic

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

a. Sulfuric acid

b. Silver nitrate

c. Hydrochloric acid

d. Copper (II) nitrate

e. Iron (II) sulfate

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

a. Digitalis grandiflora

b. Helianthus annuus

c. Sorbus aucuparia

d. Inula helenium

e. Hyoscyamus niger

13. 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. Vibrio cholerae

d. Spirochetes

e. Escherichia coli

14. 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. Translation termination

b. Translation initiation

c. Transcription termination

d. Replication initiation

e. Transcription initiation

15. Which of the listed plants is a bush with imparipinnate leaves, decussate leaf arrangement, and juicy black fruits?

a. Sambucus nigra
b. Ledum palustre
c. Urtica dioica
d. Chelidonium majus
e. Arctostaphylos uva-ursi

16. Для яких систем характерна седиментація?
a. Золів
b. Розчинів неелектролітів
c. Суспензій
d. Розчинів електролітів
e. Розчинів ВМР

17. 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. $[Ag_2(NH_3)_3]Cl$
b. $[Ag(NH_3)_2]Cl$
c. AgOH
d. $[Ag(NH_3)_3]Cl$
e. $AgCl$

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

19. People, who were indoors during a fire, suffer from a carbon monoxide poisoning. What type of hypoxia is observed in such cases?
a. Tissue hypoxia
b. Hypoxic hypoxia
c. Circulatory hypoxia
d. Respiratory hypoxia
e. Hemic hypoxia

20. Який із нижченаведених антигіпертензивних препаратів призначається пацієнтам із бронхіальною астмою?
a. Лабеталол
b. Анаприлін
c. Фармадипін
d. Надолол
e. Метопролол

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

22. What substance is used as an indicator in the back titration of an aqueous solution of acetic acid?
a. Diphenylamine
b. Murexide
c. Phenolphthalein

d. Diphenylcarbazone
e. Eriochrome black T

23. 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. Unisexual
b. Dioecious
c. Monoecious
d. Monandrous
e. Polyecious

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

25. What type of cardiac arrhythmia occurs as a result of simultaneous disruption of excitability and conduction functions?
a. Atrial fibrillation
b. Atrioventricular block
c. Sinus tachycardia
d. Respiratory arrhythmia
e. Extrasystole

26. 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. Aspirin
b. Paracetamol
c. Nurofen (Ibuprofen)
d. Indomethacin
e. Analgin (Metamizole)

27. Having examined the patient, the doctor made a diagnosis of tick-borne encephalitis. What is the route of transmission of this disease?
a. Parenteral
b. Fecal-oral
c. Airborne-droplet
d. Vertical
e. Vector-borne

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

29. 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. CH_3COOH
b. H_2SO_4
c. HCl
d. HNO_3
e. $HClO_4$

30. How many stereoisomeric aldohexoses exist?

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

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

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

33. Name the ability of high-molecular compounds to prevent precipitation of lyophobic sols and deposition of cholesterol plaques on the vessel walls:
a. Colloid protection
b. Coacervation
c. Coagulation
d. Thixotropy
e. Sedimentation

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

35. 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. Sorbus aucuparia
c. Viburnum opulus
d. Citrus limon
e. Schisandra chinensis

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

37. 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. Cohesion
e. Adhesion

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

39. 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. Compensatory dialysis
c. Electrodialysis
d. Decantation
e. Dialysis

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

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

42. Який препарат належить до групи антихолінестеразних засобів?
a. Ізонітрозин
b. Ацетилхолін
c. Дипіроксим
d. Дитилін (суксаметонію хлорид)
e. Прозерин (неостигмін)

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

44. 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 $B1$
b. Pantothenic acid
c. Biotin
d. Vitamin PP
e. Vitamin $B2$

45. What can be used to distinguish formic acid from acetic acid?
a. H_2SO_4

b. $[Ag(NH_3)_2]OH$
c. $Br_2 (H_2O)$
d. $NaOH$
e. $NaHCO_3$

46. Synthesis of a medicinal substance occurs in an isolated system. What is a direction criterion of spontaneous processes?
a. Helmholtz energy
b. Enthalpy
c. Intrinsic energy
d. Entropy change
e. Gibbs energy

47. 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. Anaphylactic
b. Immune complex
c. Cytotoxic
d. Reactive
e. Cell-mediated

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

49. 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 staphylococci in 1 liter of water
c. Number of pseudomonads in 1 liter of water
d. Number of enterococci in 1 liter of water
e. Number of coliphages in 1 liter of water

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

51. 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 active
b. Specific passive
c. General
d. Non-specific
e. Immunotropic

52. 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. Labiate
b. Funnelform
c. Tubular

d. Papilionaceous
e. Saucer-shaped

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

54. 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. Escherichia coli
c. Clostridium perfringens
d. Salmonella enteritidis
e. Streptococcus faecalis

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

56. 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. Wire inoculating loops
b. Glass test tubes
c. Physiological solution
d. Rubber gloves
e. Simple nutrient medium

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

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

59. 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. Nitrofurans
b. Dyes
c. Detergents
d. Oxidants
e. Alcohols

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

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

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

63. 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. Viruses
c. Mycoplasma
d. Microfungi
e. Protozoa

64. Caffeine is one of the alkaloids contained in tea and coffee. Caffeine is contraindicated in case of:
a. Depression of nervous activity
b. Migraine
c. Essential hypertension
d. Hypotension
e. Addiction

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

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

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

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

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

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

70. 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 ацидоз
b. Газовий алкалоз
c. Газовий ацидоз
d. Метаболічний ацидоз
e. Змішаний алкалоз

71. 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. Chloroform
b. Amyl alcohol
c. Distilled water
d. Benzene
e. Ethyl alcohol

72. Pathogenic bacteria in the human body can form structures that protect them from phagocytosis. Name these structures.

a. Flagella
b. Mesosomes
c. Inclusions
d. Capsule
e. Spores

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

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

74. What drug should not be prescribed for the treatment of arterial hypertension in a patient with gout?

a. Amlodipine
b. Cozaar (Losartan)
c. Enalapril
d. Hydrochlorothiazide
e. Atenolol

75. Helmholtz energy is the direction criterion of an arbitrary process at a constant:

a. Entropy and pressure
b. Temperature and volume
c. Internal energy and volume
d. Entropy and volume
e. Temperature and pressure

76. Which of the listed species of medicinal plants is considered to be a weed?
a. Mentha piperita
b. Salvia officinalis
c. Convallaria majalis
d. Plantago major
e. Papaver somniferum

77. What is the vapor pressure of a liquid at its boiling point?
a. Maximum
b. Minimum
c. Equal to saturated vapor pressure at room temperature
d. Equal to saturated vapor pressure at 273 K
e. Equal to atmospheric pressure

78. 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. Hyperplastic obesity
b. Retention hyperlipemia
c. Alimentary hyperlipemia
d. Transport hyperlipemia
e. Hypertrophic obesity

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

80. 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. Digestion of carbohydrates
c. Digestion of proteins
d. Digestion of fats
e. Absorption of carbohydrates

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

82. 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. Celecoxib
c. Acetylsalicylic acid
d. Metamizole
e. Paracetamol

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

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

85. 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. Ammonia
b. Hydrochloric acid
c. Sodium chloride
d. Hot water
e. Sodium hydroxide

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

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

88. Reaction of sodium ions with potassium hexahydroxoantimonate (V) in a neutral medium produces precipitate. Specify the color of this precipitate:
a. White
b. Green
c. Blue
d. Red
e. Yellow

89. To preserve valuable varietal qualities of peppermint, the optimal method of its propagation was chosen. What method is it?
a. Plantlets
b. Germinated seeds
c. Leaf cuttings
d. Parts of the tuber
e. Parts of the rhizome

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

d. Endodermis
e. Pericycle

91. What titrimetric method of analysis uses both external and internal indicators?
a. Alkalimetry
b. Permanganatometry
c. Nitritometry
d. Complexonometry
e. Argentometry

92. 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. Glucagon
b. Cortisol
c. Testosterone
d. Insulin
e. Thyroxine

93. The mechanism of action of hormones depends on their chemical nature. What hormones can penetrate the membrane and bind with intracellular receptors?
a. Steroid and thyroid hormones
b. Insulin and glucagon
c. Tropic hormones
d. Catecholamines
e. Oxytocin and vasopressin

94. 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. Arctium lappa
b. Artemisia absinthium
c. Bidens tripartita
d. Chamomilla recutita
e. Calendula officinalis

95. 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. Protein biosynthesis
b. DNA repair
c. RNA processing
d. DNA replication
e. Genetic recombination

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

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

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

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

100. 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. Collodion film
c. Glass
d. Parchment
e. Biological membrane

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

102. Sulfanilamides contain a primary aromatic amino group in their structure. What method is used for quantitative determination of these compounds?
a. Nitritometry
b. Permanganatometry
c. Cerimetry
d. Dichromatometry
e. Iodometry

103. 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. Pharmacokinetic incompatibility
b. Synergism
c. Pharmacodynamic incompatibility
d. Functional antagonism
e. Pharmaceutical incompatibility

104. 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. Neodicoumarin (ethyl biscoumacetate)
c. Vicasol (Menadione)
d. Aminocaproic acid
e. Fibrinogen

105. 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 D

b. Phospholipase A2
c. Phospholipase C
d. Neuraminidase
e. Phospholipase A1

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

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

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

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

110. 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. Cortical fibers
d. Perivascular fibers
e. Phloem fibers

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

112. 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 active thromboplastin
b. Production of fibrin polymer

c. Adhesion, aggregation, agglutination of platelets
d. Production of fibrin monomer
e. Production of thrombin

113. 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. Spores
b. Inclusions
c. Capsule
d. Cilia
e. Flagella

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

115. A patient has been warned that the medicine prescribed to him can cause a cough. Name this medicine:
a. Phenyhydin (Nifedipine)
b. Clophelin (Clonidine)
c. Metoprolol
d. Dichlothiazide (Hydrochlorothiazide)
e. Lisinopril

116. 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. Oxygen deficiency in the circulatory system
b. Decreased erythrocyte count in the blood
c. Increased oxygen delivery to tissues
d. Discrepancy between the blood supply to the tissues and the need for it
e. Dilation of arterioles

117. 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. Echinacea purpurea
b. Artemisia absinthium
c. Calendula officinalis
d. Centaurea cyanus
e. Arctium lappa

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

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

e. Denatured vaccines

120. 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

121. Який пігмент утворюється в реакції окиснення гему?
a. Білівердин
b. Хлорофіл
c. Каротин
d. Стеркобіліноген
e. Уробіліноген

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

123. 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. Improved preparation technology
b. Protection of colloid solution against coagulation
c. Increased storage time
d. Decreased side effects
e. Increased bactericidal action of \\ silver

124. 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. Restrictive
b. Peripheral
c. Central
d. Obstructive
e. Thoracic diaphragm

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

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

127. 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. Ultraviolet irradiation
b. Autoclaving
c. Bacteria-excluding filters
d. Boiling
e. Disinfectants (chloramine)

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

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

129. What drug has a hypoglycemic effect due to stimulation of pancreatic beta cells?

a. Adrenaline hydrochloride (epinephrine)
b. Glibenclamide
c. Heparin
d. Retabolil (nandrolone)
e. Prednisolone

130. Salts and esters of oxalic acid are called:

a. Malonates
b. Succinates
c. Urates
d. Adipinates
e. Oxalates

131. Microscopy shows that basidia with basidiospores are formed on the hymenium. What division do these fungi belong to?

a. Lychenophyta
b. Chytridiomycota
c. Basidiomycota
d. Zygomycota
e. Ascomycota

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

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

133. 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. Biot
b. Gasping
c. Kussmaul
d. Cheyne-Stokes
e. Stenotic

134. A patient was prescribed losartan for treatment of arterial hypertension. What mechanism of action does this drug have?

a. Calcium channel blockade
b. Inhibition of angiotensin-converting enzyme

c. Inhibition of phosphodiesterase
d. Angiotensin-receptor blockade
e. Activation of central α-adrenoceptors

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

136. 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. Bryophyta
b. Equisetiphyta
c. Polypodiophyta
d. Pinophyta
e. Lycopodiophyta

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

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

139. 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. Ketone bodies
b. Uric acid
c. Lactate
d. Bilirubin
e. Urea

140. 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. Expansive growth
b. Cancer cachexia
c. Invasion in surrounding tissues
d. Metastasis
e. Infiltrating growth

141. What adsorbent is used as a suspension to relieve the intoxication caused by alkaloid poisoning?
a. Kaolin
b. Activated charcoal

c. Silica gel
d. Starch
e. Bentonite

142. 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. Reverse transcriptase
b. Exonuclease
c. Helicase
d. DNA-ligase
e. Endonuclease

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

144. 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. Detachment of inhibitor proteins
b. Enzyme molecule phosphorylation
c. Partial proteolysis
d. Allosteric regulation
e. Attachment of inhibitor proteins

145. 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. Stem
b. Rhizome
c. Root
d. Seed
e. Leaf

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

147. 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. Immunoglobulin
b. Antitoxic serum
c. Anatoxin
d. Inactivated vaccine
e. Adjuvant

148. A man has a nitrate poisoning. What type of hypoxia will develop in this case?
a. Hemic hypoxia
b. Respiratory hypoxia
c. Hypoxic hypoxia
d. Tissue hypoxia
e. Circulatory hypoxia

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

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

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

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

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

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

155. Який патогенез розвитку цукрового діабету 1-го типу?
a. Гіперпродукція глюкагону
b. Аутоімунне ушкодження В-клітин
c. Інсулінорезистентність жирової тканини
d. Гіперпродукція соматотропіну
e. Гіперпродукція кортизолу

156. 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. Metaplastic anemia
b. Iron-deficiency anemia
c. Aplastic anemia
d. Hemolytic anemia
e. Protein-deficiency anemia

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

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

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

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

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

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

163. After the examination, the patient was diagnosed with typhus. What is the route of transmission of this disease?
a. Airborne droplet transmission
b. Vertical transmission
c. Fecal-oral transmission

d. Vector-borne transmission
e. Parenteral transmission

164. Vitamins can enhance each other's effects, when taken simultaneously. What vitamin potentiates the activity of vitamin P?
a. B_2
b. A
c. D
d. B_1
e. C

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

166. 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. Adenosine triphosphate synthetase
b. Cytochrome C reductase
c. Cytochrome oxidase
d. Succinate dehydrogenase
e. NADH-coenzyme Q reductase

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

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

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

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

171. 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. Yellow
d. Red
e. Green

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

173. 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. Cholemia
b. Arterial hypotension
c. Acholia
d. Portal hypertension
e. Suprahepatic jaundice

174. 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. Ploskirev agar
c. Levine formulation (eosin methylene blue agar)
d. Blood agar
e. Egg-yolk salt agar

175. Proteins are the catalysts of biochemical processes. What type of homogeneous catalysis includes the processes with their participation?

a. Enzyme catalysis
b. Redox catalysis
c. Acid-base catalysis
d. Gas-phase homogeneous catalysis
e. Coordination catalysis

176. A patient suffers from intense cough with production of viscous sputum. What drug can thin the sputum and facilitate expectoration?

a. Butamirate
b. Codeine phosphate
c. Acetylcysteine
d. Prenoxdiazine
e. Glaucine

177. A patient with gout has been prescribed allopurinol. What is the mechanism of action of this drug?

a. Activation of microsomal oxidation in the liver
b. Stimulation of uric acid breakdown

c. Inhibition of COX-2 enzyme
d. Intensification of uric acid excretion by the kidneys
e. Inhibition of xanthine oxidase enzyme, inhibition of uric acid synthesis

178. 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. H_2-histamine receptors blockade
c. H_1-histamine receptors blockade
d. Cholinergic receptors blockade in the sympathetic ganglia
e. Inhibition of the H^+K^+ ATPase activity

179. 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. Carbamoyl phosphate
b. Argininosuccinate
c. Citrulline
d. Fumaric acid
e. Arginine

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

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

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

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

184. 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. Triploid
b. Diploid
c. Haploid
d. Polyploid
e. Tetraploid

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

a. Antidepressant
b. Analgesic
c. Anxiolytic
d. Antipyretic
e. Diuretic

186. В яких структурах рослинних клітин накопичується вторинний крохмаль?
a. Протеопластах
b. Олеопластах
c. Вакуолях
d. Амілопластах
e. Мітохондріях

187. 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. Krotov apparatus
d. Oxidative medium
e. Anaerobic culture jar

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

189. 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. Nuclear energy
c. Thermal energy
d. Electromagnetic energy
e. Electrical energy

190. Який механізм передачі захворювання епідемічного висипного тифу?
a. Фекально-оральний
b. Трансмісивний
c. Повітряно-крапельний
d. Вертикальний
e. Парентеральний

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

192. In the roots of primary structure, the nutrient reserves are stored in the:
a. Central axial cylinder
b. Endodermis
c. Mesodermis
d. Exodermis
e. Pericycle

193. 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. Atenolol
b. Dichlothiazide (Hydrochlorothiazide)
c. Furosemide
d. Nifedipine
e. Lisinopril

194. 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. Al(III) ions
b. Sn(IV) ions
c. Cr(III) ions
d. As(III) ions
e. Zn(II) ions

195. Early-flowering rhizomatous ephemeroids include: Tussilago farfara, Convallaria majalis, and:
a. Thymus serpyllum
b. Allium cepa
c. Adonis vernalis
d. Chamomilla recutita
e. Carum carvi

196. 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. Na^+
b. Ba^2+
c. Ca^2+
d. K^+
e. Sr^2+

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

198. What value determines the degree to which foreign ions can influence the potential of an ion-selective electrode?
a. Osmotic coefficient
b. Selectivity coefficient
c. Diffusion coefficient
d. Activity coefficient
e. Electrical conductivity \\ coefficient

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

200. What drug is a non-selective beta-blocker?
a. Metoprolol
b. Atropine

c. Prozerin (Neostigmine)
d. Adrenaline hydrochloride
e. Anaprilin (Propranolol)

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

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

203. 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. Inhibitor forms strong covalent bonds with the active site of the enzyme
c. Inhibition degree does not depend on the substrate concentration
d. Inhibitor is a structural analogue of the enzyme
e. Inhibitor has no effect on the enzyme's affinity for its substrate

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

205. 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. Thermophilic
b. Anaerobic
c. Prototrophic
d. Spore-formers
e. Acid-fast

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

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

208. Many serological reactions require strictly aseptic conditions. What method of sterilization is

optimal for decontamination of laboratory glassware?

a. Dry heat
b. Calcination
c. Pasteurization
d. Filtration
e. Tyndallization

209. 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. Decreased hydrostatic blood pressure
b. Increased oncotic pressure in the tissues
c. Decreased oncotic blood pressure
d. Increased osmotic pressure of interstitial fluid
e. Decreased osmotic blood pressure

210. 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. Eosinophilic
c. Neutrophilic
d. Basophilic
e. Lymphocytic

211. 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. Anaphylactic
b. Delayed-type hypersensitivity
c. Autoallergic
d. Immune complex
e. Cytotoxic

212. In what pair of substances the both of them form a precipitate of metallic silver when Tollens reagent is added (during heating)?

a. Acetic acid and formic acid
b. Propanol and formic acid
c. Ethanol and formic acid
d. Propanal and acetic acid
e. Propanal and formic acid

213. What is the most common side effect of inhaled corticosteroids?

a. Osteoporosis
b. Arterial hypertension
c. Increased body mass
d. Subcapsular cataract
e. Oropharyngeal candidiasis

214. A person has been stung by a bee. The stung area developed redness and edema. What is the main mechanism of edema development?

a. Increased hydrostatic blood pressure
b. Disturbed lymphatic efflux
c. Increased permeability of the \\ capillaries
d. Decreased oncotic blood pressure
e. Decreased osmotic blood pressure

215. Який спосіб титрування використовують, якщо до розчину досліджуваної речовини додають точно виміряний надлишок допоміжного титранта?

a. Пряме титрування
b. Титрування за залишком

c. Будь-яке титрування
d. Неводне титрування
e. Замісникове титрування

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

217. 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. mRNA
c. tRNA
d. rRNA
e. Protein

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