1. Enzymes accelerate biochemical reactions, making them occur more than 10^8 times faster. What equation describes the rate of enzyme catalysis?

a. Law of mass action

b. Michaelis-Menten equation

c. Arrhenius equation

d. Van't Hoff reaction isotherm

e. Van't Hoff equation

2. Which pair of substances can produce an emulsion when mixed together?

a. Urea and water

b. Menthol and camphor

c. Soybean oil and water

d. Silicon dioxide and water

e. Silver nitrate and water

3. One week after an inpatient treatment with penicillin, a microorganism that was initially susceptible to this antibiotic developed a resistance to penicillin, tetracyclines, aminoglycosides, and macrolides. What mechanism of antibiotic resistance formation is observed in this case?

a. Mutational

b. R-plasmid

c. Phenotypic

d. Spontaneous

e. Natural selection

4. What unstratified (or, less often, stratified) tissue in plant stems, roots, and needles has a protective integumentary function and a water-storing function?

a. Hypodermis

b. Exodermis

c. Periderm

d. Epiblem

e. Epidermis

5. What substance can be used to prepare primary standard solutions of titrants?

a. NaOH

b. KMnO_4

c. I_2

d. HCl

e. K_2Cr_2O_7

6. What reaction is the common reaction for detection of arsenic(III) and arsenic(V) compounds?

a. Reaction with ammonium molybdate

b. Reaction of reduction to arsine

c. Reaction with sodium nitrate

d. Reaction with potassium iodide

e. Reaction with iodine

7. A woman with type 1 diabetes mellitus developed hyperglycemic coma. Examination revealed metabolic acidosis. This condition developed because of accumulation of the following in the blood:

a. Bile acids

b. Ketone bodies

c. Residual nitrogen

d. Ammonium ions

e. Indirect bilirubin

8. Heating of sodium phenolate in CO_2 stream results in production of a certain carboxylic acid. Name the resulting compound:

a. Aminophenol

b. Salicylic acid

c. Phenyl salicylate

d. Ethyl salicylate
e. Benzoic acid

9. What compound can be classified as a condensed arene?
a. Biphenyl
b. Benzene
c. Naphthalene
d. Triphenylmethane
e. Diphenylmethane

10. Vitamins and vitamin-like compounds are required for activation of higher fatty acids and their transport through the mitochondrial membrane. Name one such compound:
a. Thiamine
b. Carnitine
c. Biotin
d. Riboflavin
e. Ubiquinone

11. Microbiological purity of tableted drugs had been tested at factory. Samples cultivation in mannitol salt agar resulted in growth of golden-yellow colonies, microscopic examination of colonies detected gram-positive globular bacteria positioned in clusters; microorganisms had plasma coagulation prorerties. What pure bacterial culture was obtained?
a. Enterobacteriaceae
b. Pseudomonas aeruginosa
c. Staphylococcus epidermidis
d. Staphylococcus aureus
e. Staphylococcus saprophyticus

12. What electrochemical method of quantitative analysis is based on measuring the amount of electric current that has been used for electrochemical reduction or oxidation of ions or elements that are being determined in the process of electrolysis?
a. Amperometry
b. Coulometry
c. Conductometry
d. Potentiometry
e. Polarography

13. Amino acids take part in methylation reactions during the synthesis of a number of bioactive substances - adrenaline, melatonin, phosphatidylcholine, creatine. For the synthesis of these compounds, the active form of a certain amino acid is used. Name this amino acid.
a. Threonine
b. Phenylalanine
c. Methionine
d. Valine
e. Alanine

14. Specify the standard solution (titrant) for the iodometric determination of oxidants:
a. KMnO_4
b. I_2
c. KBrO_3
d. Na_2S_2O_3
e. K_2Cr_2O_7

15. Complexonometry is a titrimetric method of analysis based on the interaction of polydentate ligand complexes with cations of alkaline earth and heavy metals, which results in formation of strong, easily water-soluble compounds. Solution of what substance is used in complexonometry as a titrant?
a. Potassium dichromate
b. Sulfuric acid

c. Silver(I) nitrate
d. Sodium thiosulfate
e. Trilon B (ethylenediaminetetraacetic acid tetrasodium salt)

16. To choose an indicator for acid-base titration, a titration curve needs to be built. This curve reflects the dependence of:
a. Concentration of the analyzed compound from solution pH
b. Solution pH from the volume of the solution being analyzed
c. Solution pH from the concentration of the added titrant solution
d. Solution pH from the temperature
e. Solution pH from the volume of the added titrant

17. A patient was prescribed doxycycline hydrochloride for etiopathogenetic treatment of an infectious process. In this case the patient should be warned about the following side efect:
a. Uricosuria
b. Arterial hypertension
c. Photosensitization
d. Peripheral edemas
e. Hypercapnia

18. Name the state of colloidal particles that has zero electrokinetic potential and can be characterized by the absence of directed movement of the granules in the electric field.
a. Neutralized
b. Electroneutral
c. Isoelectric
d. Compensated
e. Neutral

19. Indicator microorganisms are being analyzed in the process of sanitary microbiological assessment of the environment, food, water, and commodities. Quantitative indicators of pollution are being measured, as well as the presence of certain microbial species. What value characterizes total microbial contamination in 1 gram of a solid substance or in 1 milliliter of a liquid?
a. Coli index
b. Perfringens titer
c. Microbial count
d. Coli titer
e. Perfringens index

20. What solution can be used to detrmine the presence of chloride ions in the potable water?
a. Iodine
b. Potassium bromate
c. Silver nitrate
d. Ammonia
e. Sodium hydroxide

21. Adrenaline is used to prolong the action of novocaine (procaine) during infiltration anesthesia. What effect of adrenaline provides this prolongation?
a. Functional suppression of nerve endings and conductors
b. Vasoconstriction
c. Potentiation of novocaine (procaine) action at the level of central nervous system
d. Vasodilation
e. Inhibition of tissue esterases

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

e. Atropine sulfate

23. An anxiolytic agent, a benzodiazepine derivative, was prescribed to a patient with a neurosis in order to reduce its signs. What medicine belongs to this group of drugs?

a. Diazepam
b. Trihexyphenidyl
c. Piroxicam
d. Nandrolone
e. Atropine sulphate

24. Interaction between dispersed phase and dispersion medium is different for different systems. If dispersed phase has low interaction with medium, the system is called:

a. Bound disperse
b. Free disperse
c. Lyophilic
d. Lyophobic
e. Hydrophilic

25. Hyperlipemia is observed in a patient 2-3 hours after eating greasy food. 9 hours later lipid ratio becomes normal again. How can this condition be characterised?

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

26. A patient diagnosed with viral hepatitis developed ascites, jaundice, itching, leg edemas, and dyspnea. What type of jaundice is observed in the patient?

a. Mechanical
b. Suprahepatic
c. Obstructive
d. Hemolytic
e. Parenchymatous

27. It is known that heterologous antisera are obtained by means of animal immunization. What complications can arise when they are introduced into human body?

a. Sensitivity loss
b. Visual impairment
c. Water-electrolyte imbalance
d. Gastrointestinal disorders
e. Allergic response

28. Name the process when a dissolved macromolecular compound is sedimented by adding electrolytes into the solution:

a. Flocculation
b. Salting out
c. Coacervation
d. Denaturation
e. Jelly formation

29. In pharmaceutical production the oxyethylated derivatives of fatty acid esters (FAEs) are used, which undergo colloid dissolution in sufficiently concentrated solutions. This process is called:

a. Syneresis
b. Sensitization
c. Colloid protection
d. Solubilization
e. Synergism

30. A 40-year-old man was prescribed antibiotics as a part of the complex therapy for peptic ulcer

disease of the stomach. Which of the following combinations is indicated in this case?
a. Levomycetin (chloramphenicol) + ampicillin
b. Oxacillin + nalidixic acid
c. Phenoxymethylpenicillin + lincomycin
d. Streptomycin + benzylpenicillin
e. Amoxicillin + clarithromycin

31. When protective action of proteins weakens, cholesterol accumulates on the vessel walls because its particles become glued together. Name this phenomenon:
a. Synergism
b. Thixotropy
c. Coagulation
d. Sedimentation
e. Sensitization

32. What integumentary tissue of roots consists of cells with thin cellulose membranes and outgrowths - root hairs?
a. Pleroma
b. Rhizoderm (epiblem)
c. Phelloderm
d. Periderm
e. Periblem

33. What compound is obtained as the result of propylene interacting with bromine CH_3-CH=CH_2 + Br_2longrightarrow?
a. 1,1-Dibromopropane
b. 1,2-Dibromopropane
c. -
d. 1,2-Dibromopropene
e. 1,3-Dibromopropane

34. What is the mechanism of Br_2 attaching to propene?
a. S_R
b. S_E
c. A_E
d. A_N
e. S_N

35. A woman with trichomoniasis was prescribed a drug that is an imidazole derivative. Name this drug:
a. Ampicillin
b. Miramistin
c. Iodinol
d. Metronidazole
e. Resorcin

36. A patient is pale, has goose bumps and chills. What stage of fever is it characteristic of?
a. Temperature increase
b. Compensation
c. Temperature decrease
d. Latent stage
e. Continuous fever

37. Colloidal systems are widely used in medicine. In pastes:
a. Dispersed medium - solid, continuous medium - solid
b. Dispersed medium - solid, continuous medium - gas
c. Dispersed medium - solid, continuous medium - liquid
d. Dispersed medium - liquid, continuous medium - liquid
e. Dispersed medium - liquid, continuous medium - gas

38. A patient has developed anemia against the background of nonspecific ulcerative colitis. In the blood, there are hypochromia, micro- and anisocytosis, and poikilocytosis. What type of anemia can be suspected in this case?

a. Iron deficiency
b. Sideroblastic
c. Aplastic
d. Hemolytic
e. B_12 and folate deficiency

39. The process of putrefaction is a component of physicochemical changes that occur with food proteins in the human gastrointestinal tract. What product is excreted with the urine and is an indicator of the intensity of the protein putrefaction in the large intestine?

a. Bilirubin
b. Indican
c. Ammonia
d. Cholesterol
e. Benzene

40. A patient has developed anuria. Blood pressure is 50/20 mm Hg. What process of uropoiesis was disturbed resulting in acute decrease of urine output?

a. Tubular secretion
b. -
c. Obligate reabsorption
d. Glomerular filtration
e. Facultative reabsorption

41. Coagulation of hydrophobic sols occurs after a certain amount of electrolyte is added. How do we call the minimal concentration of electrolyte that induces colloid solution coagulation?

a. Coagulation threshold
b. Neutralization
c. Coagulation ability
d. Condensation
e. Concentration

42. The fruit is a spiky spherical green capsule. The capsule splits open into two valves and contains usually one large glossy dark brown seed with a matt whitish scar. It is a fruit of:

a. Plantago major
b. Hipericum perforatum
c. Papaver somniferum
d. Datura stramonium
e. Aesculus hippocastanum

43. What factor will cause an increase in glomerular filtration in the kidneys?

a. Increased oncotic blood pressure
b. Reduced number of functioning glomeruli
c. Reduced hydrostatic pressure in the glomerular capillaries
d. Increased intra-renal pressure
e. Reduced oncotic blood pressure

44. Drafting of analytical normative documents requires skills in macro- and microscopical analysis of plant organs. If a microslide mount shows clearly visible multilayered palisade (columnar) parenchyma, it is characteristic of:

a. Stems of dicotyledons
b. Leaves
c. Roots
d. Fern rhizomes
e. Adventitious roots

45. A patient with allergic dermatitis came to the hospital. What anti-inflammatory and anti-allergic

drug must be prescribed in this case?

a. Prednisolone

b. Oxytocin

c. Ethamide

d. Insulin

e. Retabolil (Nandrolone)

46. The State Pharmacopoeia of Ukraine includes the method of determining molar mass of a polymer, which is based on the following property of high-molecular substances:

a. Viscosity

b. Osmotic pressure

c. Freezing point

d. Light scattering

e. Saturated vapor pressure

47. In dental practice liquid dosage forms that contain camphor and chloralhydrate are used. What phases are in equilibrium in the eutectic point of fusiblity curve of the camphor-chloralhydrate mixture?

a. Eutectic melt

b. Camphor crystals, chloralhydrate crystals

c. Eutectic melt, camphor crystals, chloralhydrate crystals

d. Eutectic melt, chloralhydrate crystals

e. Eutectic melt, camphor crystals

48. What antibiotic is used for treatment of syphilis?

a. Streptomycin

b. Benzylpenicillin

c. Nystatin

d. Amphotericin

e. Kanamycin

49. Iodimetry involves use of standard solutions of iodine and Na_2S_2O_3. What substance is used to standardize the sodium thiosulfate solution?

a. NaCl

b. K_2CO_3

c. As_2O_3

d. N_2B_4O_7

e. K_2Cr_2O_7

50. In iodometry, titrimetric quantitative analysis is used to measure the amount of iodine utilized for the oxidation of a reducing agent or released as a result of iodide oxidation. What salt is used to make an iodide solution for iodometry?

a. Calcium iodide

b. Magnesium iodide

c. Potassium iodide

d. Lithium iodide

e. Sodium iodide

51. A woman presents with poor twilight vision and dry conjunctiva and cornea. What vitamin deficiency can cause such disorders?

a. A

b. C

c. D

d. B_12

e. B

52. A woman, who during the 5th-10th weeks of her pregnancy had been taking sodium valproate for treatment of her epilepsy, gave birth to a child with pathology of the vertebral column (split spine). What side effect of the drug caused such malformation?

a. Teratogenic
b. Fetotoxic
c. Sensitizing
d. Embryotoxic
e. Mutagenic

53. Insulin production in beta-cells involves many substances. What substance gives the main signal for insulin synthesis when its concentration changes?
a. Heparin
b. Glucose
c. Urea
d. Hemoglobin
e. Carbon dioxide

54. Microscopy of a root detects root hairs, which are the cell growths of:
a. Exodermis
b. Endodermis
c. Epiblem
d. Mesoderm
e. Epidermis

55. Explain to a young physician, how to prevent withdrawal syndrome in a patient after completion of glucocorticoid therapy:
a. CNS stimulants
b. Vitamin preparations
c. Immunostimulating therapy
d. Gradual decrease of the dose
e. Antidotal therapy

56. A patient has been prescribed oral drug to treat diarrhea. In accordance with the WHO and Pharmacopoeia requirements 1 g (ml) of drug can contain the following number of microorganisms:
a. 10 bacteria and no mold fungi
b. 1000 bacteria and 200 mold fungi
c. 1000 bacteria and 100 mold fungi
d. No bacteria and no mold fungi
e. 100 bacteria and 10 mold fungi

57. Lipids are a group of water-insoluble substances of various structure that carry out a number of functions. What lipids form a protective layer over skin, fur, or feathers of animals?
a. Phospholipids
b. Triglycerides
c. Cholesterol esters
d. Waxes
e. Glycolipids

58. Rapid analysis of benzoate ions by means of Pharmacopoeia reaction with iron(III) chloride produces:
a. Green precipitate
b. Blue precipitate
c. Black precipitate
d. Pink-yellow precipitate
e. Red precipitate

59. Datura stramonium fruit is a:
a. Legume with two seeds
b. Silicular capsule
c. Spiny capsule
d. Pseudomonocarpous drupe
e. Trihedral nutlet

60. A ready-made drug was inoculated on Sabouraud's agar and incubated under 22^oC for 5 days. This nutrient medium was used to determine the following:

a. Presence of S. aureus
b. Presence of E) coli
c. Total number of bacteria
d. Number of mold and yeast fungi
e. Presence of Salmonella

61. A patient has bradycardia, moderate hypotension, decreased basal metabolism, and edemas. What disorder is the likely cause of these signs?

a. Hypoparathyroidism
b. Hyperthyroidism
c. Adrenal hypofunction
d. Hyperparathyroidism
e. Hypothyroidism

62. Chromatographic analysis methods differ in their mechanism of sorbent-sorbate interaction. What partition mechanism is used in ion-exchange chromatography?

a. Different solubility of the solutes in the stationary phase
b. Production of coordination compounds of different stability in the phase or on the sorbent surface
c. Different ion-exchange capacity of the substances
d. Different adsorption capacity of the solid sorbent towards different substances
e. Solutes and sorbent producing precipitates of different solubility

63. Aggression enzymes are characteristic of pathogenic microorganisms. Select one such aggression enzyme from the list.

a. Lactamase
b. Lyase
c. Catalase
d. Lecithinase
e. Transferase

64. A man has acute glomerulonephritis. Because of oliguria, water retention is observed in his body. What abnormality of the total blood volume is most likely to be detected in this patient?

a. Simple hypervolemia
b. Oligocythemic hypervolemia
c. Polycythemic hypervolemia
d. Oligocythemic normovolemia
e. Simple hypovolemia

65. Electrokinetic potential is a parameter that measures the charge of proteins, leukocytes, and erythrocytes. At what interface is the electrokinetic potential generated?

a. Aggregate-potential-determining ions
b. Core-diffuse layer
c. Granule-diffuse layer
d. Core-adsorption layer
e. Micelle-dispersion medium

66. What solution is used to standardize the silver(I) nitrate titrant solution in Mohr's method?

a. Potassium dichromate solution
b. Sodium tetraborate solution
c. Sodium carbonate solution
d. Sodium oxalate solution
e. Sodium chloride solution

67. What local anesthetic is used to treat ventricular arrhythmia?

a. Bupivacaine
b. Ropivacaine
c. Ultracaine

d. Anesthesin (Benzocaine)

e. Lidocaine hydrochloride

68. If addition of an alkali solution and heating provokes the release of ammonia in an analyzed solution, it indicates that the analyzed solution contains the following ions:

a. NH_4^+

b. Na^+

c. NO_3^-

d. NO_2^-

e. K^+

69. Bacteriological analysis was conducted to assess the quality of the water used for pharmaceutical purposes. What value indicates the number of coliform bacteria in 1 liter of water?

a. Coliphage titer

b. Enterococcus titer

c. Perfringens titer

d. Coli index

e. Microbial number

70. Specify the substance that results from the following reaction: CH equiv CHxrightarrow HOH, medspace Hg^2+ ?

a. Propanal

b. Acetic acid

c. Ethanol

d. Propanone

e. Ethanal

71. Serology is the main method of congenital toxoplasmosis diagnostics. What reaction is used to diagnose this pathology?

a. Neutralization

b. Complement fixation

c. Agglutination

d. Bacteriolysis

e. Precipitation

72. A poisonous weed of the Solanaceae family has branching downy stems. Its leaves are soft, dull, and dark green; on their lower surface they are light gray, with thicker and longer down along their veins and edges. The flowers are sessile, with a deciduous five-lobed funnelform corolla that is colored dirty yellow (rarely whitish) and has a network of purple-violet veins. The fruit is an urceolate capsule with an operculum. These features are characteristic of:

a. Nicotiana tabacum

b. Atropa belladonna

c. Datura stramonium

d. Datura innoxia

e. Hyoscyamus niger

73. A dithizone solution was added into the studied alkaline solution of cations that belong to the IV analytical group. As a result, a compound formed that was coloring not only the organic but also the aqueous phase in red. What cations are present in the solution, as indicated by this analytical effect?

a. Al^3+

b. Zn^2+

c. Cr^3+

d. Fe^3+

e. Bi^3+

74. Investigation of bacterial contamination of indoor air in a pharmacy takes into account the total number of microorganisms present in a certain air volume, as well as qualitative content of indoor air microflora. Name the sanitary-indicative microorganisms for indoor air:

a. Staphylococcus and streptococcus

b. Chromobacterium
c. Fungi and yeasts
d. Colibacillus
e. Sarcina

75. A 13-year-old female patient, having suffered from measles, complains of dry mouth, thirst, body weight loss, polyuria; her glucose concentration in blood is 16 mmol/l. What disease can be suspected?
a. Diabetes insipidus
b. Type I pancreatic diabetes
c. Type II pancreatic diabetes
d. Steroidogenic diabetes
e. Glycogenosis

76. During a surgery, tubocurarin chloride was used as a muscle relaxant. What antagonist should the patient be given to restore spontaneous breathing?
a. Dithylin (Suxamethonium)
b. Proserin (Neostigmine)
c. Benzohexonium (Hexamethonium)
d. Cytitone (Cytisine)
e. Aethimizole (Methylamide)

77. A hospitalised patient was diagnosed with immunity deficiency that resulted in low resistance against viral infection. What cells are most probably deficient?
a. Neutrophiles
b. T-lymphocytes
c. Fibroblasts
d. B-lymphocytes
e. Macrophages

78. Potassium iodide solution has been added to the solution containing cations of the sixth analytical group (acid-base classification). It resulted in the red precipitate soluble in excess of reagent. What cations are present in the solution?
a. Cadmium
b. Nickel
c. Mercury (II)
d. Bismuth
e. Cobalt (II)

79. Which of the drugs listed below quickly arrests angina pectoris attack when taken sublingually?
a. Amiodarone
b. Digoxin
c. Nitroglycerine
d. Lisinopril
e. Convallariae glycoside

80. Rapid growth of tumor node and its progressing malignant change (malignization) is observed in a patient. The described developments are characteristic of the following stage of tumor growth:
a. Promotion
b. Progression
c. Exudation
d. Inactivation
e. Transformation

81. Complex biological systems contain components such as electrolytes, non-electrolytes, and proteins that together create osmotic pressure. What part of osmotic pressure is formed primarily by proteins?
a. Oncotic pressure
b. Internal pressure

c. Cellular pressure
d. -
e. Biological pressure

82. A patient with myxedema was recommended substitution therapy. What hormones are used for this purpose?
a. Mineralocorticoids
b. Thyroid hormones
c. Glucocorticoids
d. Androgens
e. Estrogens

83. A certain perennial alkaloid-containing plant is widely used in medicine. It has the following features: pinnately dissected leaves with light green upper surface and bluish lower surface; regular bisexual flowers with double perianth, attached to long peduncles, located in the axils of narrow sharp bracts, and clustered together in umbel inflorescences; the fruit is a siliquiform capsule; the plant produces an orange milky sap. These biological features are characteristic of:
a. Chelidonium majus
b. Papaver somniferum
c. Vinca minor
d. Atropa belladonna
e. Datura stramonium

84. What is the name of the phenomenon when one drug enhances the effect of another?
a. Tachyphylaxis
b. Antagonism
c. Withdrawal
d. Synergism
e. Sensitization

85. Ammonium ions (NH_4^+) must be removed from a mixture during the detection of sodium (Na^+) and potassium (K^+) cations of the first analytical group. Why is it necessary?
a. They interfere with the determination of potassium and sodium ions
b. The solution pH becomes >7, because of hydrolysis of these ions
c. The solution pH becomes <7, because of hydrolysis of these ions
d. Ammonium salts decompose at high temperatures
e. Compounds with K^+ and Na^+ ions form supersaturated solutions

86. Halogen atoms can be detected in an organic compound, if the following test is performed:
a. Baeyer's test
b. Beilstein's test
c. Molisch's test
d. Iodoform test
e. Lucas' test

87. Name the process of cell membrane saturation with a fat-like substance - suberin:
a. Cutinization
b. Suberization
c. Mucification
d. Lignification
e. Mineralization

88. Many drugs must be manufactured under strictly aseptic conditions. One such possible source of microbiological contamination of drugs is laboratory glassware. What method should be used to sterilize the glassware?
a. Tyndallization
b. Pasteurization
c. Boiling
d. Dry heat

e. Ignition

89. In spring a perennial plant of Asteraceae family produces floral shoots with gloden-yellow flowers. After blossom-fall, shoots with large leaves appear. Name this plant:

a. Tussilago farfara
b. Hipericum perforatum
c. Datura stramonium
d. Potentilla erecta
e. Petroselinum crispum

90. A chemist-analyst must determine the quantitative content of hydrochloric acid in a mixture that contains nitric acid. What titrimetric method of analysis can be used for this purpose?

a. Iodometry
b. Acid-base titration
c. Argentometry
d. Permanganatometry
e. Complexonometry

91. An engine driver complains of his seasonal allergy symptoms. What non-sedating drug should be prescribed in this case?

a. Atenolol
b. Analgine (Metamizole)
c. Fenofibrate
d. Novocaine
e. Loratadine

92. During the morphological analysis of a flower, the presence of a reduced perianth in the form of two membranes - lodicules - was established. Its stamens have long staminal filaments. Its pistil has a feathery stigma. This description is characteristic of the plants that belong to the following family:

a. Convallariaceae
b. Alliaceae
c. Lamiaceae
d. Poaceae
e. Pinaceae

93. Polarography is one of the electrochemical methods of analysis. What parameter is used in polarographic analysis to identify the substance being analyzed?

a. Half-wave potential
b. Magnitude of the electromotive force
c. Height of a polarographic wave
d. Width of a polarographic wave
e. Position of a polarographic wave

94. What type of gynoecium has several or many free carpels?

a. Cenocarpous
b. Apocarpous
c. Paracarpous
d. Syncarpous
e. Monocarpous

95. A Gram stained smear shows large oval violet cells that form pseudomycelium. Name these microorganisms:

a. Mucor fungi
b. Plasmodium vivax
c. Candida fungi
d. Penicillium fungi
e. Actinomycetales

96. Herbarium specimens of medicinal plants are being studied. Which one of them belongs to

Rosaceae family?
a. Polygonum persicaria
b. Melilotus officinalis
c. Capsella bursa-pastoris
d. Crataegus sanguinea
e. Conium maculatum

97. A doctor prescribed metoprolol to a patient, which helped to lower the patient's blood pressure. This drug belongs to the following pharmacological group:
a. Nicotinic antagonists
b. Alpha-blockers
c. Beta-blockers
d. Sympatholytics
e. Muscarinic antagonists

98. Which of the given reactions produces ethane as a result?
a. [Al_4C_3xrightarrow[]H_2O]
b. [CO + 2H_2xrightarrow[]Fe, t^o]
c. [CH_2=CH_2xrightarrow[t^o, p]H_2, кат.]
d. -
e. [C_2H_5OHxrightarrow[]k.H_2SO_4, t^o]

99. A patient developed neuritis of the facial nerve after 5 months of anti-tuberculosis treatment. What drug has caused this side effect?
a. Rifampicin
b. Ceftriaxone
c. Benzylpenicillin sodium
d. Sodium para-aminosalicylate
e. Isoniazid

100. The products of condensation of aldehydes with hydroxylamine belong to the following class:
a. Hemiacetals
b. Hydrazides
c. Ketoximes
d. Aldoximes
e. Hydrazones

101. Microscopy of an axial organ shows that between the secondary phloem and xylem there is a layer of live, thin-walled, tightly packed, slightly elongated cells. What structure is formed by these cells?
a. Cambium
b. Phellogen
c. Pericycle
d. Procambium
e. Periderm

102. What cations of the fifth analytical group (acid-base classification) form colored hydroxides when precipitated with a group reagent?
a. Sn^2+, Sr^2+
b. Fe^2+, Fe^3+
c. Ag^+, Al^3+
d. Ca^2+, Ba^2+
e. Na^+, K^+

103. What synthetic drug of the hydrazide group is typically prescribed for pulmonary tuberculosis?
a. Doxycycline hydrochloride
b. Metronidazole
c. Acyclovir
d. Rifampicin

e. Isoniazid

104. A patient has been hospitalized with the provisional diagnosis of gas gangrene, caused by spore-forming anaerobes. What nutrient medium must be used for inoculation of the material, obtained from the patient, to isolate a pure culture and confirm the diagnosis?

a. Endo medium
b. Levin medium
c. Egg yolk-salt agar
d. Kitt-Tarozzi medium
e. Meat-peptone agar, meat-peptone broth

105. A patient is being consulted by the family doctor. He asks what role cholesterol plays in the body. The doctor explains that cholesterol is a constituent part of the cell membranes and is necessary for synthesis of various substances, among which there are following hormones:

a. Eicosanoids
b. Amino acid derivatives
c. Peptide hormones
d. Protein hormones
e. Steroid hormones

106. L-DOPA and its derivatives are used in treatment of Parkinson's disease. What aminoacid is this substance made of?

a. Asparagine
b. Arginine
c. Tyrosine
d. Tryptophan
e. Glutamate

107. A patient with acute myocardial infarction received anticoagulation therapy. What compound will have anticoagulation effect?

a. Chondroitin sulfate
b. Hyaluronic acid
c. Keratan sulfate
d. Heparin
e. Dermatan sulfate

108. A patient has been diagnosed with bronchial asthma. Specify the drug that can be administered for asphyxiation:

a. Anapriline
b. Acetylcysteine
c. Salbutamol
d. Diclofenac sodium
e. Paracetamol

109. Treatment of withdrawal syndrome in cases of morphine discontinuation requires the use of a drug that is an opiate receptor antagonist. Select this drug from the list.

a. Naloxone hydrochloride
b. Codeine phosphate
c. Ketorolac
d. Riboflavin
e. Omnopon

110. An autoimmune disorder of islet beta-cells was detected in a 14-year-old girl with hyperglycemia, glycosuria, and polyuria. What type of diabetes does this girl have?

a. Gestational diabetes
b. Diabetes insipidus
c. -
d. Type 2 diabetes mellitus
e. Type 1 diabetes mellitus

111. Bactericidal drug rivanol contains the following heterocyclic structure:
a. Quinoline
b. Anthracene
c. Acridine
d. Phenanthrene
e. Isoquinoline

112. To quantitatively determine Fe^3+ ions, a photometric reaction with sulfosalicylic acid was conducted. Photometric determination of the obtained solution requires measuring of the following:
a. Specific rotation
b. Optical density
c. Refractive index
d. Half-wave potential
e. Wavelength

113. Sodium hexanitrocobaltate(III) is used to determine the presence of potassium cations in a solution. What visual analytical effect is observed in this case?
a. Formation of a blue precipitate
b. Formation of a yellow precipitate
c. Formation of a violet precipitate
d. Formation of a black precipitate
e. Formation of a white precipitate

114. What is the name of the single elongated crystals with pointed ends that can be detected during the microscopy of the herbal raw material harvested from a monocotyledonous plant?
a. Styloids
b. Cystoliths
c. Globoids
d. Druses
e. Crystalline sand

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

116. A patient, who lives in the area with specific geochemical conditions, was diagnosed with endemic goiter. What microelement deficiency results in development of this pathology?
a. Cl
b. I
c. Na
d. Br
e. F

117. What reagent allows to simultaneously detect aldehyde group and glycol fragment presence in glucose molecule?
a. KMnO_4
b. Cu(OH)_2
c. AlCl_3
d. Br_2
e. FeCl_3

118. A doctor has prescribed the patient a dopamine precursor for treatment of Parkinson's disease. After administration of this drug, the patient's mobility and mental processes improved and the ability to concentrate was restored. The maximum effect was observed after a month of treatment. Name this drug:

a. Midantan (Amantadine)
b. Bromocriptine
c. Cyclodol (Trihexyphenidyl)
d. Levodopa
e. Selegiline

119. The mother of a 3-year-old child was taking antibiotics during her pregnancy. The child presents with destruction of the incisors and a brown border on the gums. What antibiotic has caused this side effect?
a. Levomycetin (Chloramphenicol)
b. Ciprofloxacin
c. Doxycycline hydrochloride
d. Co-amoxiclav
e. Azithromycin

120. A plant has roots with bacteriorhiza, complex leaves with stipules, flowers with a papilionaceous corolla, and a silique fruit. These features are characteristic of the following family:
a. Fabaceae
b. Asteraceae
c. Apiaceae
d. Lamiaceae
e. Solanaceae

121. If there is no strophanthin in the pharmacy stock, the following cardiac glycoside can be used as its substitute:
a. Izolanid (Lanatoside C)
b. Corglycon (Convallatoxin)
c. Adonisid (Adonis vernalis glycosides)
d. -
e. Digitoxin

122. A pregnant woman has received intravenously a uterotonic to stimulate uterine activity. This drug is a synthetic analog of a hormone of the posterior pituitary. Name this drug:
a. Proserin
b. Anaprilin (Propranolol)
c. Folliculin (Estrone)
d. Dinoprost
e. Oxytocin

123. After acute nitrite poisoning, the patient was diagnosed with acquired toxic hemolytic anemia. A large amount of regenerative forms of erythrocytes were detected in the patient's blood smear. Name these cells.
a. Reticulocytes
b. Drepanocytes
c. Schistocytes
d. Microcytes
e. Annulocytes (Codocytes)

124. Jellies and the process of jellification are of great importance in medicine and biology. Name the process of jelly destruction followed by the restoration of its jellified state:
a. Thixotropy
b. Syneresis
c. Coagulation
d. Coacervation
e. Salting-out

125. A mushroom picker, who accidentially ate death cap mushroom, has been hospitalised. Death cap toxin - alpha-amanitine - inhibits RNA-polymerase II in eukaryotes. What process requires this enzyme?

a. Recognition
b. Translation
c. Transcription
d. Replication
e. Reparation

126. Nitritometry is used to determine primary aromatic amines. What indicator is used in the process?
a. Potassium chromate
b. Phenolphthalein
c. Methyl orange
d. Eosin
e. Tropaeolin 00

127. Quite often the soil may contain a number of pathogenic microorganisms. Causative agents of the following disease may exist in the soil for a long time:
a. Diphtheria
b. Pertussis
c. Viral hepatitis
d. Dysentery
e. Anthrax

128. What drug selectively suppresses the secretion of the gastric glands by blocking H_2-histamine receptors?
a. Famotidine
b. Ipratropium bromide
c. Omeprazole
d. Loratadine
e. Atropine sulfate

129. A man presents with signs of albinism: blonde hair, extreme photosensitivity, impaired vision. What amino acid metabolism is disturbed in the patient?
a. Valine
b. Tyrosine
c. Histidine
d. Methionine
e. Proline

130. A 60-year-old man with heart failure has received a cardiotonic that is a beta_1 adrenergic agonist. Name this drug:
a. Salbutamol
b. Potassium aspartate and magnesium aspartate
c. Xenical (Orlistat)
d. Papaverine
e. Dobutamine

131. What bacteria indicate the presence of fecal contamination?
a. Anthracoids
b. Escherichia coli
c. Klebsiella
d. Serratia
e. Sarcina

132. Hydrolysis reaction will textbfNOT occur with:
a. Fat
b. Glycerol
c. Cellulose
d. Starch
e. Protein

133. What method is used for simultaneous elimination of the effect of foreign substances, concentration, and determination of concentration?

a. Polarimetry
b. Fluorimetry
c. Refractometry
d. Extraction-photometric analysis
e. Differential spectrophotometry

134. What heterocycle has acidophobic properties?

a. Pteridine
b. Quinoline
c. Pyrimidine
d. Pyrrole
e. Thiophene

135. Chlorophyta division representatives have chromatophores of various shapes in their cells. What genus includes species with ribbon-shaped chromatophores?

a. Chlamidomonas
b. Spirulina
c. Spirogyra
d. Volvox
e. Chlorella

136. A man came to a doctor complaining of a severe joint pain. Urinalysis shows increased levels of uric acid, which indicates:

a. Increased activity of fatty acid beta- oxidation
b. Intensive breakdown of purine nucleotides
c. Increased glycogenolysis activity
d. Increased glycolysis activity
e. Increased synthesis of ketone bodies

137. A person with carbon monoxide poisoning (CO) presents with disturbed consciousness and high levels of carboxyhemoglobin in blood. What type of hypoxia does this patient have?

a. Tissue
b. Respiratory
c. Exogenic
d. Circulatory
e. Hemic

138. Cholesterol synthesis inhibitors are used as antiatherosclerotic drugs. Select one such drug from the list:

a. Lovastatin
b. Benzylpenicillin
c. Pancreatin
d. Chloramphenicol
e. Sulfanilamide

139. A patient with essential hypertension was prescribed a diuretic as a part of complex therapy. This diuretic caused hypokalemia in the patient. Name this diuretic:

a. Amiloride
b. Allopurinol
c. Triamterene
d. Spironolactone
e. Hydrochlorothiazide

140. When activated carbon is included in the combination therapy, the absorption of the other drugs changes in the following way:

a. Increases
b. Accelerates

c. Decreases
d. Remains unchanged
e. Activates

141. An HIV-infected patient presents with suppression of the immune system activity. What cells are affected in this case, causing the state of immunodeficiency in the patient?
a. B lymphocytes
b. Suppressor T cells
c. Helper T cells
d. Killer T cells
e. Macrophages

142. In Ukraine all vaccinations are conducted according to the Ministry of Health decree ''On preventive immunization in Ukraine and control of quality and turnover of immunobiological medical products''. Which of the listed diseases is included in the national routine immunization schedule?
a. Influenza
b. HIV infection
c. Rickettsiosis
d. Botulism
e. Poliomyelitis

143. Flowers with cruciform (cross-shaped) flower-cup and corolla, tetradynamous androecium, pod and silicle seeds are characteristic of the following family:
a. Brassicaceae
b. Rosaceae
c. Asteraceae
d. Ranunculaceae
e. Papaveraceae

144. In the epidemiology of certain diseases, a great attention must be paid to fleas as disease carriers. Particularly, the fleas play a major role in the spread of:
a. Relapsing fever
b. Typhus
c. Plague
d. Leptospirosis
e. Anthrax

145. Because of its antiplatelet effect, acetylsalicylic acid is used in the treatment of diseases of the cardiovascular system. What mechanism is this effect based on?
a. Stimulation of synthesis of E1 prostaglandins
b. Reduction of synthesis of E2 prostaglandins
c. Inhibition of COX-2 enzyme activity
d. Inhibition of COX-1 enzyme activity
e. Inhibition of thromboxane A2 biosynthesis

146. Cytology has detected sex chromatin (Barr bodies) in interphase cell nuclei of a 23-year-old man. What chromosomal disorder is it characteristic of?
a. Klinefelter syndrome
b. Cri-du-chat syndrome
c. Turner syndrome
d. Trisomy X
e. Down syndrome

147. To determine the mass-volume fraction of ammonia in the solution, neutralization back titration was used. Specify the pair of titrants necessary in this case:
a. HCl, AgNO_3
b. HCl, Hg_2(NO_3)_2
c. HCl, NaOH
d. HCl, Hg(NO_3)_2

e. CH_3COOH, KOH

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

149. What is the name of an elongated dehiscent fruit formed from a coenocarpous gynoecium and divided by a membranous partition with seeds?
a. Silique
b. Legume
c. Cremocarp
d. Disk-shaped schizocarp
e. Capsule

150. The synthesis of thyroid hormones is carried out from tyrosine within a special protein of the thyroid gland. Name this protein.
a. Albumin
b. Immunoglobulin
c. Interferon
d. Thyroglobulin
e. Histone

151. 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. Parathyroid glands
b. Gonads
c. Adrenal glands
d. Thyroid gland
e. Pituitary gland

152. A patient has developed megaloblastic anemia on a background of alcoholic hepatocirrhosis. The main cause of anemia in this patient is the following vitamin deficiency:
a. Biotin
b. Lipoic acid
c. Pantothenic acid
d. Folic acid
e. Thiamin

153. A patient has been receiving Theophylline (inhibitor of cyclic adenosine monophosphate phosphodiesterase) for a week. What hormone can increase its action due to such treatment and cause hyperglycemia as the result?
a. Testosterone
b. Glucagon
c. Estradiol
d. Insulin
e. Aldosterone

154. A patient has been hospitalized into the infectious diseases department of a regional hospital with the provisional diagnosis of typhoid fever. What serological reaction must be carried out to confirm the diagnosis?
a. Widal test
b. Elek test
c. Wright reaction
d. Huddleson reaction
e. Wassermann reaction

155. What analytical method can be used to quantify hydrogen peroxide without any special indicators?

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

156. Choose the most efficient way of convallariae glycoside administration for acute cardiac failure treatment:

a. Oral
b. Inhalational
c. Intravenous
d. Intramuscular
e. Subcutaneous

157. Heparin is a potent natural anticoagulant, synthesized in mast cells. What is the chemical nature of this compound?

a. Heteropolysaccharide
b. Phospholipid
c. Homopolysaccharide
d. Simple protein
e. Steroid

158. In case of excessive consumption of carbohydrates, insulin stimulates the transformation of carbohydrates into lipids in the cells of adipose tissue. What process is involved in this transformation?

a. Gluconeogenesis
b. Synthesis of higher fatty acids
c. Heme synthesis
d. Lipolysis
e. Uric acid synthesis

159. From the patient's pleural cavity, an exudate sample was obtained. This sample has the following composition: protein -- 34 g/L, blood corpuscles -- 3600 in mcL, predominantly neutrophils, pH -- 6.8. What type of exudate is it?

a. Mixed
b. Serous
c. Fibrinous
d. Hemorrhagic
e. Purulent

160. For eczema treatment, a doctor has prescribed the patient a medicine that must be applied transdermally. What is the maximum number of microbial bodies allowed in 1 g of this product, according to the regulations of the WHO and the Pharmacopoeia?

a. A total of 1000 bacteria and fungi
b. A total of 100 bacteria and fungi
c. A total of 500 bacteria and fungi
d. 100 bacteria and 50 fungi
e. 100 bacteria and 100 fungi

161. Inhibitors of a certain enzyme from amines metabolism are used to treat depression. What enzyme is inhibited to achieve this effect?

a. Monoamine oxidase with flavine adenine dinucleotide
b. Kynurenine-3-hydroxylase
c. Formylkynureninase (Arylformamidase)
d. Acetylcholinesterase
e. Lactate dehydrogenase

162. Each stem node of white deadnettle (Lamium album) has two leaves that grow perpendicularly to the leaves of the previous node. Such leaf arrangement is called:

a. Spiral

b. Cross-opposite

c. Rosette

d. Leaf mosaic

e. Verticillate

163. In practical classes the group of students have to explore the chemical structure of glucose molecule. Which of the following suits most for simultaneous detection of aldehyde group and glycol fragment in previously mentioned molecule?

a. AlCl_3

b. KMnO_4

c. Br_2

d. Cu(OH)_2

e. FeCl_3

164. Primary protein structure is formed as the result of amino acid polymerization. What bonds between the amino acid residues are characteristic of this structure?

a. Electrostatic

b. Ion interaction

c. Hydrophobic

d. Hydrogen

e. Peptide

165. High-molecular substances can be isolated from the solution using electrolytes. Name this process.

a. Coagulation

b. Sedimentation

c. Aggregation

d. Salting out

e. Swelling

166. Emulsions are classified according to the volume concentration of dispersed phase. An emulsion with the concentration at the rate of 0,1-74,0% vol. relates to the following group of emulsions:

a. Concentrated

b. Diluted

c. Highly concentrated

d. Reversible

e. Direct

167. The breakdown of hemoglobin is accompanied by the formation of bile pigments. What pigment forms as a result of the heme oxidation reaction?

a. Biliverdin

b. Stercobilinogen

c. Urobilinogen

d. Chlorophyll

e. Carotene

168. A woman complains of itching lips; they are reddened and covered in scabs and scales after she had been using new lipstick for two weeks. What allergic reactions result in this kind of disorders?

a. Cytotoxic

b. Anaphylactic

c. Stimulating

d. Delayed

e. Immune complex

169. The stem surface of a woody plant is being studied. It is noted that the cells are parenchymal, dead, with suberized membranes. Therefore, this is:

a. Cork
b. Phelloderm
c. Phellogen
d. Sclerenchyma fibers
e. Vessels

170. What drug is an H_2-histamine receptor blocker?
a. Gastrotzepin (Pirenzepine)
b. Famotidine
c. Allochol
d. Omeprazole
e. Almagel

171. Enteral lipid metabolism is possible only under a certain set of conditions. What substance of those named below provides for emulsification of lipids, activation of lipase and absorption of fatty acids?
a. Bile acid
b. Cholesterol
c. Amino acids
d. Glucose
e. Hydrochloric acid

172. The Wasserman test was positive in a 25-year-old woman. What disease can be diagnosed using this test?
a. Tuberculosis
b. Diphtheria
c. Syphilis
d. Leptospirosis
e. Brucellosis

173. During harvesting herbal raw materials, a marked mosaicism was noticed on the leaves of medicinal plants. What microorganisms cause this disease?
a. Bacteria
b. Microscopic fungi
c. Viruses
d. Viroids
e. Protozoa

174. A 45-year-old man suffers from antacid gastritis. In this case, disturbed production of the following substance can be observed in the patient's stomach:
a. Pepsin
b. Mucus
c. Hydrochloric acid
d. Intrinsic antianemic factor
e. Gastricsin

175. What conditions are necessary for the formation of crystalline precipitates?
a. Slow precipitation in cold dilute solutions
b. Slow precipitation in cold concentrated solutions
c. Rapid precipitation in hot concentrated solutions
d. Rapid precipitation in hot dilute solutions
e. Slow precipitation in hot dilute solutions

176. A 56-year-old man with ischemic heart disease was prescribed metoprolol. What is the mechanism of action of beta-blockers in ischemic heart disease?
a. Dilation of the coronary vessels
b. Increase of the myocardial oxygen demand
c. Reduction of the peripheral vessel tone
d. Constriction of the coronary vessels

e. Reduction of the myocardial oxygen demand

177. A patient with atherosclerosis was prescribed an antiatherosclerotic agent. Name this drug:
a. Dexamethasone
b. Ascorbic acid
c. Piracetam
d. Fenofibrate
e. Butadion (Phenylbutazone)

178. During anaerobic glycolysis, ATP synthesis occurs by means of substrate phosphorylation that uses the energy of other macroergic compounds. Name one such compound:
a. Glucose
b. Lactate
c. Phosphoenolpyruvate
d. Pyruvate
e. Glucose-6-phosphate

179. A patient presents with persistent fever, with the difference between evening and morning temperature not exceeding 1^oC) What type of fever curve is present in this patient?
a. Intermittent
b. Hectic
c. Continuous
d. Remittent
e. Recurrent

180. Osmotic pressure is an important characteristic of biological fluids. Semipermeable membranes are necessary for penetration of solvent molecules. What substance textbfCANNOT be used as a semipermeable membrane?
a. Biological membrane
b. Glass
c. Gelatine
d. Collodion film
e. Parchment

181. Recommend the patient with glaucoma an M-cholinomimetic agent:
a. Sulfacyl-sodium (Sulfacetamide)
b. Levomycetin (Chloramphenicol)
c. Pilocarpine hydrochloride
d. Atropine sulfate
e. Ephedrine hydrochloride

182. Phosphate anions and arsenate anions form similar precipitates insoluble in an ammonia solution during their reaction with:
a. Cobalt sulfate solution
b. Sodium hydroxide solution
c. Lead acetate solution
d. Magnesia mixture (a solution containing MgCl_2, NH_4Cl, NH_3)
e. Nessler's reagent

183. A 5-year-old child after drinking milk often develops the following symptoms: abdominal distension, spastic pain and diarrhea. These symptoms develop after 1-4 hours after single instance of taking milk. What enzymes are deficient, thus, causing the described symptomatology?
a. Lactolytic
b. Sucrolytic
c. Fructolytic
d. Maltolytic
e. Glucolytic

184. A 58-year-old man presents with a peripheral circulation disorder with a restricted arterial inflow,

paleness of the affected area, and decrease of partial oxygen pressure in the affected area. Name this disorder:

a. Reperfusion syndrome
b. Venous hyperemia
c. Thrombosis
d. Arterial hyperemia
e. Ischemia

185. The study of the main root ontogenesis shows that it has developed from:

a. Pericycle
b. Intercalary meristem
c. Radicle
d. Lateral meristem
e. Apical meristem

186. What type of colloidal systems are foams?

a. Liquid-solid
b. Liquid-liquid
c. Gas-gas
d. Gas-liquid
e. Solid-liquid

187. The isoelectric point of a protein is 5.7. At what pH value does the protein macroion move to the anode?

a. 4.0
b. 5.0
c. 4.7
d. 7.0
e. 5.7

188. A laboratory received a food product that had been taken from the focus of food poisoning and presumably contained botulinum toxin. To identify the type of toxin, the neutralization reaction must be performed on white mice. What biological product is used in this reaction?

a. Allergen
b. Antitoxic serum
c. Diagnosticum
d. Antibacterial serum
e. Normal serum

189. Upon examination of a flower it is determined to have one pistil made up of single free carpel. Therefore, this gynoecium can be identified as:

a. Lysicarpous
b. Apocarpous
c. Paracarpous
d. Syncarpous
e. Monocarpous

190. During a practical session in pharmaceutical botany, the students were studying herbarium specimens of Asteraceae family plants. What plant of this family has flowers that are all yellow, zygomorphic, ligulate, and bisexual?

a. Centaurea cyanus
b. Achillea millefolium
c. Taraxacum officialis
d. Bidens tripartita
e. Echinacea purpurea

191. In permanganatometry, KMnO_4 is used as a titrant. What is the equivalence factor of this compound, if the titration is performed in an acidic medium?

a. 1/3

b. 1/5
c. 1
d. 1/4
e. 1/2

192. Why do alcohols have higher boiling points as compared to their isomeric ethers?
a. Dehydration ability of alcohols
b. Increased molecular weight
c. Formation of intermolecular hydrogen bonds
d. Ability to participate in electrophilic substitution reactions
e. Ether ability to form associates

193. Many species of wild rose are a source of vitamins, fatty oils, and herbal material. Specify the juicy pseudocarps that are harvested as herbal raw material:
a. Rose hips
b. Aggregate-accessory fruits
c. Coenobia
d. Cenocarp stone-fruits
e. Hesperides

194. Collagen, gelatin, keratin, and myosin are the proteins that are formed with peptide bonds and resemble long threads in shape. Name this type of proteins:
a. Structured proteins
b. Globular proteins
c. -
d. Chain proteins
e. Fibrillar proteins

195. What disperse system can be classified as liquid-liquid based on its aggregate state?
a. Lather
b. Fog
c. Activated carbon
d. Milk
e. Smoke

196. A patient complains of a girdling epigastric pain. Examination reveals increased diastase levels in the patient's urine and undigested fat in the stool. These signs are the most characteristic of the following pathology:
a. Acute appendicitis
b. Acute pancreatitis
c. Gastritis
d. Enterocolitis
e. Infectious hepatitis

197. Biological fluids (sera, enzyme and vitamine solutions, etc.) are vulnerable to high temperatures, which is why they are sterilized under the temperature of 56--58^oC. They are heated 5--6 times, with 24-hour-long intervals between them. What sterilization method is it?
a. Pasteurization
b. Moist heat sterilization
c. Autoclaving
d. Flaming
e. Tyndallization

198. Coumarins, vitamin K antagonists, suppress the processes of blood coagulation. What protein synthesis is blocked by coumarins?
a. Transferrin
b. Albumin
c. Gamma globulin
d. Prothrombin

e. Ceruloplasmin

199. A child that attends a day care center fell ill with measles. What is used to prevent this disease in the contact persons?

a. Immunostimulants
b. Sulfanilamides
c. Measles immunoglobulin
d. Measles vaccine
e. Antibiotics

200. Ammonium thiocyanate solution was added into the solution being studied. The resulting solution colored red. This analytical effect indicates the presence of the following cation:

a. Lead(II)
b. Silver
c. Mercury(I)
d. Mercury(II)
e. Iron(III)

201. Both scientific and folk medicine uses medicinal plant Glycyrrhiza glabra L. What part of the plant is harvested?

a. Inflorescence
b. Grass
c. Roots and rhizomes
d. Seeds
e. Leaves

202. Thermolabile medicinal preparation for extemporal use was heated to 65^oC thrice with intervals of one day between the heatings. What method of sterilization was used in this case?

a. Calcination
b. Tyndallization
c. Koch's steam sterilization
d. Pasteurization
e. Filtration

203. What reaction must be conducted by an analytical chemist during the preliminary tests to determine chromium(III) ions?

a. Reaction with sodium hydroxide and hydrogen peroxide
b. Reaction with ammonia
c. Reaction for formation of a perchromic acid after preliminary oxidation of chromium
d. Reaction with potassium permanganate
e. Reaction with sodium hydroxide

204. A patient complains of increased urine 24-hour volume and thirst. Laboratory analysis detects acetone and high levels of sugar in his urine. What hormone secretion is disturbed, leading to these changes?

a. Insulin
b. Vasopressin
c. Testosterone
d. Aldosterone
e. Glucagon

205. A patient has asked the dispensing chemist to recommend him a drug that can increase the endurance of an organism in adverse environmental conditions. The chemist recommended the following:

a. Camomile flowers infusion
b. Eucalyptus tincture
c. Calendula tincture
d. Oak bark decoction
e. Schisandra tincture

206. What is the mechanism of action of a catalyst in a chemical reaction?

a. Reduces activation energy

b. Changes the degree of dispersion

c. Increases activation energy

d. Changes the nature of the reagents

e. Does not change the activation energy

207. Extreme therapeutic effect of activated carbon is due to its high specific surface area. Name the phenomenon when gases are absorbed only by the surface of a solid body:

a. Adhesion

b. Cohesion

c. Adsorption

d. Recuperation

e. Desorption

208. Many organic compounds break up in the cell into simple products. What compounds break up into ammonia, carbon dioxide, and water in the human body?

a. Keto acids

b. Monohydric alcohols

c. Monosaccharides

d. Fatty acids

e. Amino acids

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

a. Intrinsic energy

b. Enthalpy

c. Gibbs energy

d. Helmholtz energy

e. Entropy change

210. What pharmacological effect of acetylsalicylic acid allows using it for prevention of thrombosis in patients with ischemic heart disease?

a. Antiaggregant

b. Ulcerogenic

c. Analgesic

d. Antipyretic

e. Anti-inflammatory

211. A colloidal solution emits a matte glow, when light passes through it, due to the light scattering on the colloidal particles as a result of diffraction. Name this physical phenomenon:

a. Sedimentation

b. Syneresis

c. Coagulation

d. Intramolecular diffraction

e. Opalescence

212. What potential forms at the interface between two solutions?

a. Contact potential

b. Electrokinetic potential

c. Diffusion potential

d. Electrode potential

e. Surface potential

213. Albinism can be characterized by disturbed metabolism of a certain amino acid. Name this amino acid.

a. Histidine

b. Phenylalanine

c. Methionine

d. Glutamine
e. Tryptophan

214. What nutrient medium is used for obtaining a fungal culture?
a. Endo medium
b. Sabouraud medium
c. Casein-carbon agar
d. Kitt-Tarozzi medium
e. Ploskirev medium

215. According to the Rayleigh equation, the intensity of scattered light is inversely proportional to the wavelength of:
a. Incident light
b. Incident light (third power)
c. Incident light (second power)
d. Incident light (fourth power)
e. Incident light (fifth power)

216. The prosess of one substance drawing the other in only with its surface is called:
a. Coagulation
b. Adsorption
c. Chemisorption
d. Absorption
e. Desorption

217. A patient, who was prescribed famotidine to treat peptic ulcer disease, came to the pharmacy. What is this drug's mechanism of action?
a. Muscarinic receptor blockade
b. H2-histamine receptor blockade
c. Inhibition of hydrogen potassium ATPase
d. Ganglionic receptor blockade
e. H1-histamine receptor blockade

218. Coagulation of sols under the effect of electrolytes can be determined by a general rule. Name this rule.
a. Van't Hoff rule
b. Gibbs rule
c. Duclos-Traube rule
d. Arrhenius law
e. Schulze-Hardy rule

219. Formation enthalpy equals zero for the following substance:
a. H_2SO_4
b. CO_2
c. H_2O_2
d. CaCO_3
e. O_2

220. A pharmacy produces a batch of vials with physiological saline for injections. How should they be sterilized?
a. In a dry heat sterilizer
b. Under pressure in an autoclave
c. In a steam-jacketed autoclave chamber
d. X-ray irradiation
e. Ultraviolet irradiation

221. Chloromethane is used in medicine as a local anesthetic. In the manufacturing of certain medicines, it is an intermediate product of the technological chain. What compound is formed as a result of alkaline hydrolysis of chloromethane according to the scheme given below?

CH_3-Cl+NaOHxrightarrow H_2O ?
a. Methanal
b. Ethane
c. Methanol
d. Methane
e. Sodium formate

222. Production of digestive juices by gastrointestinal tract mucosa is regulated by various factors. What local hormone can affect this process?
a. Gastrin
b. Bradykinin
c. Endorphin
d. Angiotensin
e. Calcitriol

223. What non-steroidal anti-inflammatory drugs selectively block COX-2?
a. Indomethacin, Diclofenac sodium
b. Ibuprofen, Ketoprofen
c. Mefenamic acid, Naproxen
d. Meloxicam, Nimesulide
e. Ortophen, Voltaren

224. Name the psychostimulant with analeptical action, which is a purine derivative:
a. Tramadol
b. Medazepam
c. Caffeine and sodium benzoate
d. Sulpiride
e. Sodium bromide

225. A patient with bronchial asthma and pulmonary emphysema presents with dyspnea, sensation of lack of air. What type of hypoxia does this patient have?
a. Hemic
b. Exogenic
c. Circulatory
d. Respiratory
e. Tissue

226. What drug should a doctor choose for substitution therapy after surgical removal of thyroid gland?
a. L-thyroxine
b. Parathyreoidine
c. Insulin
d. Mercazolil (Thiamazole)
e. Prednisolone

227. On day 7 of dimedrol (diphenhydramine) treatment, the patient noted a decrease in the effectiveness of the drug. What pharmacological concept describes the decreased response of the body to a drug?
a. Idiosyncrasy
b. Mutagenicity
c. Carcinogenicity
d. Tolerance
e. Embryotoxicity

228. What anion of the 2nd analytic group produces black precipitate with group reagent AgNO_3?
a. Br^-
b. I^-
c. NCS^-
d. S^2-

e. Cl^-

229. The anti-tumor preparation Methotrexate is a structural analogue of folic acid. The mechanism of its action is based on the inhibition of the following enzyme:

a. Dihydrofolate reductase
b. Lactate dehydrogenase
c. Xanthine oxidase
d. Creatine kinase
e. Hexokinase

230. What inflammatory mediator contributes to an increase in body temperature?

a. Histamine
b. Thromboxane
c. Bradykinin
d. Interleukin-1
e. Serotonin

231. What reagent can be used to distinguish between ethanol (C_2H_5OH) and glycerine?

a. FeCl_3
b. HBr
c. Ag_2O
d. KMnO_4
e. Cu(OH)_2

232. Name the type of an inflorescence that has an elongated and thickened main axis with sessile flowers:

a. Spadix
b. Umbel
c. Flat capitulum
d. Round capitulum
e. Spike

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

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

234. A fibrinolysis inhibitor was used to stop postpartum bleeding. Name this drug.

a. Hemostatic sponge
b. Nettle leaves
c. Thrombin
d. Calcium chloride
e. Aminocaproic acid

235. Microscopy of a smear obtained from the pharyngeal mucosa of a sick child with suspected diphtheria detected yellow-brown bacilli with dark blue thickened ends. What staining method was used in this case?

a. Ziehl-Neelsen stain
b. Gram stain
c. Loeffler stain
d. Neisser stain
e. Aujeszky stain

236. To study the sanitary and microbiological quality of water at a laboratory, the minimum volume of water, in which bacteria of the Escherichia coli group can be detected, was determined. According to the State Standard of Ukraine, this value must be no less than:

a. 100
b. 500
c. 300
d. 400
e. 200

237. An outbreak of acute intestinal infection occurred in a kindergarten. An epidemiological laboratory team has conducted an examination of hand lavage of kitchen workers. What microorganisms in the hand lavage can indicate a fecal contamination?
a. S. aureus
b. C) albicans
c. E) coli
d. Streptomycetes
e. Actinomycetes

238. In order to identify the cations of zinc (II) an analytical chemist used the reagent solution of hexacyanoferrate (II) potassium (Pharmacopeia reaction). What colour would the precipitate have in this reaction?
a. Green
b. White
c. Yellow
d. Black
e. Red

239. What short-acting loop diuretic can cause significant hypokalemia?
a. Amiloride
b. Triamterene
c. Furosemide
d. Spironolactone
e. Mannitol

240. During absolute starvation, the body uses endogenous water. What substance is the source of endogenous water in the human body?
a. Proteins
b. Proteoglycans
c. Glycogen
d. Fats
e. Cellulose

241. A woman underwent gastric resection and 5 years later was diagnosed with B_12-deficiency anemia. What blood cells are typically present in this type of anemia?
a. Echinocytes
b. Annulocytes
c. Microcytes
d. Megalocytes
e. Reticulocytes

242. Fatty degeneration of liver is prevented by lipotropic substances. Which of the following substances belongs to them?
a. Cholesterol
b. Glucose
c. Glycine
d. Methionine
e. Bilirubin

243. Bioavailability of a powder depends on the degree of comminution of the substance. The following value must be measured:
a. Particle volume
b. Concentration

c. Solution density
d. Particle mass
e. Dispersion

244. A woman has chronic heart failure with edema syndrome. Increased aldosterone levels were detected in her blood. What diuretic must be prescribed in this case?
a. Asparcam
b. Paracetamol
c. Spironolactone
d. Furosemide
e. Theophylline

245. Sputum analysis by means of flotation and Ziehl-Neelsen staining technique revealed red long thin bacilli, both isolated and arranged in clusters. What disease is caused by this pathogen?
a. Tuberculosis
b. Pertussis
c. Actinomycosis
d. Diphtheria
e. Tularemia

246. In the patient's blood plasma there are high levels of low-density and very low-density lipoproteins. These changes can indicate the following pathology:
a. Gout
b. Atherosclerosis
c. Leukaemia
d. Jaundice
e. Arthrosis

247. When do order and molecularity of chemical reactions coincide?
a. Always coincide
b. Never coincide
c. In complex multi-stage reactions only
d. In simple one-stage reactions only
e. In enzymatic reactions

248. A patient with bronchitis was taking doxycycline hydrochloride. What side effects can develop in the patient after the patient has been taking this drug for some time?
a. Withdrawal, dependence
b. Hypotension, vertigo
c. Diarrhea, hepatitis
d. Hypertension, arrhythmia
e. Euphoria, tolerance

249. While on a tour, the students have been collecting summer shoots of Equiseti arvensis that were hard to the touch. What type of the outer shell is characteristic of the epidermal cells of this plant?
a. Cutinized
b. Mineralized
c. Lignified
d. Slimified
e. Suberinized

250. The patient's 24-hour urine output is 6 liters, its specific gravity varies from 1003 to 1008 g/L. What pathological process can be characterized by these signs?
a. Acute renal failure
b. Chronic renal failure
c. Diabetes mellitus
d. Hypothyroidism
e. Diabetes insipidus

251. What thermodynamic potential is the criterion for the direction of a spontaneous process at constant volume and temperature?

a. Helmholtz energy

b. Enthalpy

c. Chemical potential

d. Gibbs energy

e. Entropy

252. To create a vaccine for hepatitis B prevention the gene responsible for HBsAg production was integrated into the genome of vaccinia virus. What type of vaccine is obtained in this way?

a. Synthetic

b. Inactivated

c. Genetically engineered vaccine

d. Anatoxin

e. Chemical

253. What is the type of leaf attachment to the stem in Papaver somniferum?

a. Perfoliate

b. Auriculate

c. Sheathing

d. Ochreate

e. Clasping

254. What compound will react with propane under the given conditions?

a. Cl_2, FeCl_3

b. CH_3COONO_2

c. Br_2, hnu, 20^oC

d. HNO_3 concentrated

e. H_2SO_4 concentrated

255. A doctor has prescribed a nonsteroidal anti-inflammatory drug to relieve inflammation and pain syndrome. Name this drug:

a. Prednisolone

b. Calcium chloride

c. Diclofenac sodium

d. Glibenclamide

e. Loratadine

256. Main process of ammonia neutralization occurs in the liver. Arginine decomposition reaction that produces urea as a result is catalyzed with arginase. What group of enzymes does arginase belong to?

a. Isomerases

b. Transferases

c. Oxidoreductases

d. Hydrolases

e. Synthetases

257. Long-term use of antibiotics can result in development of dysbiosis. What method can detect intestinal dysbiosis?

a. Gnotobiotic experiments

b. Serology

c. Bacteriology

d. Allergy testing

e. Patient interview

258. Suppositories are widely used in medicine. What requirement should their aggregative stability meet?

a. Must be solid

b. Must not disintegrate

c. Melting point of 37^oC
d. Must not dissolve
e. Must be non-volatile

259. A patient with neuritis takes diazepam. To relieve joint pain, he was prescribed an analgesic in a dose lower than the average therapeutic dose. What phenomenon did the doctor take into account when reducing the dose of the analgesic?
a. Material cumulation
b. Summation
c. Tolerance
d. Potentiation
e. Drug addiction

260. A patient with mushroom poisoning has developed the following symptoms: yellow coloring of skin and sclera, dark-coloured urine. Hemolytic jaundice was diagnosed. What pigment causes such colouring of the patient's urine?
a. Biliverdin
b. Conjugated bilirubin
c. Verdohemoglobin
d. Unconjugated bilirubin
e. Stercobilin

261. To induce diabetes mellitus in a rabbit, beta-cells of pancreatic islets (islets of Langerhans) were selectively damaged with alloxan. What method of diabetes induction was used in this experiment?
a. Isolated organs
b. Irritation
c. Introduction of enzymes, hormones
d. Shutdown
e. Stimulation

262. Blood test is as follows: erythrocytes - 1,5cdot 10^12/l; hemoglobin - 60 g/l; blood color index - 1,4; leukocytes - 3,0cdot 10^9/l, thrombocytes - 1,2cdot 10^10/l, reticulocytes - 0,2%. Blood smear revealed Jolly bodies, Cabot rings, megalocytes. What type of anemia does the patient have?
a. Hypoplastic anemia
b. Iron deficiency anemia
c. Iron refractory anemia
d. Hemolytic anemia
e. B_12 and folic acid deficiency anemia

263. As a result of a car accident, a man (driver) has suffered an extensive blood loss. He presents with rapid breathing, tachycardia, and low blood pressure. What pathological condition is likely to be observed in him one hour after the blood loss?
a. Erythrocyte hyperchromia
b. Hyperglycemia
c. Dyslipidemia
d. Hypovolemia
e. Erythrocyte hypochromia

264. A patient has been diagnosed with ischemic heart disease with high cholesterol levels. What drug should be included into the patient's treatment regimen?
a. Atorvastatin
b. Hydrochlorothiazide
c. Diclofenac sodium
d. Celecoxib
e. Fentanyl

265. Oxygen cocktails are used in treatment of upper air passages. What kind of colloid system is it?
a. Suspension
b. Paste

c. Aerosol
d. Emulsion
e. Powder

266. Explain to a pharmacy student, why group III anions have no group reagent:
a. They have large ionic radii
b. They belong to toxic elements
c. They can form soluble acids
d. They have close ionic radii
e. They form water-soluble salts with most cations

267. According to the Bancroft's rule, the dispersion medium of an emulsion will be the liquid, with which the emulsifier:
a. Has affinity
b. Forms a colored compound
c. Chemically interacts
d. Forms a precipitate
e. Forms an insoluble compound

268. Cryoscopic constants of water, benzene, chloroform, acetic acid and camphor equal to 1,86; 5,12; 4,9; 3,9; 40,0 respectively. Which of these solvents should be selected for the most accurate determination of the molar mass of a drug substance (nonelectrolyte) by the cryoscopic method?
a. Acetic acid
b. Chloroform
c. Camphor
d. Water
e. Benzene

269. Bacteria eventually become resistant to antibacterial agents. What enables gram-positive bacteria's resistance to penicillin antibiotics?
a. Active synthesis of peptidoglycane
b. Beta-lactamases production
c. Protein synthesis
d. Active transport of antibiotics
e. Cell wall permeability

270. In March, the children in a kindergarten were given a salad made from fresh cabbage stored in a cold cellar. Several hours later, many of these children developed signs of food poisoning. What microorganisms are the likely cause of poisoning in this case, considering the conditions in which they were reproducing?
a. Psychrophiles
b. Mesophiles
c. Thermophiles
d. Facultative
e. Resident

271. A patient with essential hypertension has been prescribed a drug with an antianginal, hypotensive, and antiarrhythmic effect. Name this drug.
a. Dopamine hydrochloride
b. Clonidine
c. Epinephrine
d. Metoprolol
e. Fenoterol

272. A quantity of medicine expressed in units of mass (milligram, gram), volume, or bioactivity (units of activity) is called:
a. Dosage form
b. Effectiveness
c. Dose

d. Speed of action
e. Therapeutic index

273. Microbial survival within environment is facilitated by spore formation. What microorganisms of those listed below are spore formers:
a. Clostridia
b. Staphylococci
c. Peptococci
d. Bacteroides
e. Peptostreptococci

274. A pregnant woman suffers from pneumonia: the term of pregnancy is 20 weeks. What chemotherapeutical drug not dangerous to development of the fetus can be prescribed to the patient?
a. Benzylpenicillin
b. Sulfalene
c. Ofloxacin
d. Levomycetin (Chloramphenicol)
e. Gentamicin

275. What hormone can provoke an increase in blood pressure and elevated blood levels of glucose and lipids in a patient with hypotension, who has taken it as a component of a drug?
a. Insulin
b. Progesterone
c. Folliculin
d. Testosterone
e. Adrenaline

276. A 60-year-old man has depressive syndrome and glaucoma. Why is antidepressant amitriptyline contraindicated in this case?
a. It acts as an alpha-blocker
b. It acts as a muscarinic agonist
c. It increases blood pressure
d. It acts as a muscarinic antagonist
e. It is contraindicated for elderly patients

277. The patient has icteric skin; unconjugated bilirubin content in blood is high; conjugated bilirubin in urine is not detected. There is significant amount of urobilin in urine and stercobilin in feces. Name the pathology characterized by the given symptoms:
a. Hepatocellular jaundice
b. Atherosclerosis
c. Hemolytic jaundice
d. Obstructive jaundice
e. Jaundice of the newborn

278. A diagnostic feature important for correct identification of pine species is the number of needles on the short shoots (brachyblasts). Pinus sylvestris has the following number of needles on its short shoots:
a. 2
b. 8
c. Many
d. 5
e. 3

279. Atropine sulfate belongs to the following group of drugs:
a. Tranquilizers
b. Muscarinic antagonists
c. alpha-adrenergic agonists
d. Nicotinic antagonists

e. beta-adrenergic agonists

280. Nuciform fruits include a certain type of one-seeded fruit that does not burst when ripe. Its base is enclosed in a cup-shaped cupule formed by the broad part of the peduncle to which the flower was attached. Name this type of fruit:

a. Nut
b. Samara
c. Acorn
d. Caryopsis
e. Nutlet

281. Permanganatometry is used in determination of many organic and inorganic compounds. What are the main advantages of permanganatometry over the other oxidimetric methods?

a. High selectivity and sensitivity when determining compounds
b. Various types of indicators can be used; in some cases catalysts are necessary to accelerate the reaction
c. Sufficiently high stability of potassium permanganate and its solutions
d. Pure potassium permanganate is easily available and obtainable
e. Sufficiently high redox potential; it is possible to determine titration end-point without indicator

282. In a nursery-garden some medicinal plants developed signs of a disease: there are yellow spots and necrotic foci on the leaves. Sap of the diseased plants remained infectious even after passing through a bacteria-excluding filter. No microorganisms growth was detected on the nutrient medium. What microorganisms could be the cause of this disease?

a. Ray fungi
b. Bacteria
c. Mycoplasma
d. Viruses
e. Fungi

283. The following ion has the highest coagulation ability for iron hydroxide sol with positively charged granules:

a. Sodium
b. Calcium
c. Sulfate
d. Nitrate
e. Chloride

284. In a plant being studied, epidermis of some of the leaves has a thick cuticle and a layer of wax on the surface, while epidermis of the other leaves has scales or numerous trichomes and only a few stomata. What group does this plant belong to?

a. Hygrophytes
b. Mesophytes
c. Ephemerals
d. Xerophytes
e. Hydrophytes

285. Isoelectric state of protein molecules depends on the:

a. pH of the medium
b. Mass of the solute
c. Solution preparation technique
d. Concentration of the solvent
e. Shape of the protein molecule

286. After severe emotional strain a 53-year-old man suddenly developed acute pain in the heart area, which irradiates to the left hand, to the neck, and under the left scapula. He noted numbness of his left hand. His face is pale and covered in cold sweat. Nitroglycerine administration stopped the pain attack after 10 minutes had passed. What is the most likely disease in this case?

a. Angina pectoris

b. Pulmonary embolism
c. Myocardial infarction
d. Somatoform autonomic dysfunction
e. Stroke

287. A patient has periodic urticaria that manifests as blisters that the patient develops on the skin after eating red fish. The patient has been diagnosed with anaphylactic allergic reaction. In this case, an increase in the titer of a certain immunoglobulin would be detected. Name this immunoglobulin.
a. IgM
b. IgD
c. IgG
d. IgA
e. IgE

288. Choose the potent fast-acting diuretic to induce forced diuresis:
a. Furosemide
b. Acetazolamide
c. Spironolactone
d. Hydrochlorothiazide
e. Triamterene

289. When working in the garden, a man accidentally cut his hand. The wound remained untreated. Shortly after that the wounded area developed inflammation with accumulation of exudate that contained numerous viable and degenerate neutrophils. What type of exudate is it?
a. Serous
b. Hemorrhagic
c. Purulent
d. Catarrhal
e. Fibrinous

290. In the practice of harvesting herbal raw material of Asteraceae family the term "flowers" means both individual flowers and inflorescences. However, the notion of "flowers" is botanically correct only for:
a. Arnica montana
b. Centaurea cyanus
c. Gnaphalium uliginosum
d. Bidens tripartita
e. Echinops ritro

291. A patient with tuberculosis has developed impaired hearing after a long-term antibiotic treatment. What drug has caused such an ototoxic effect in this case?
a. Pefloxacin
b. Ampicillin
c. Benzylpenicillin
d. Ceftriaxone
e. Streptomycin

292. Morphological analysis of poplar inflorescence showed that it is a simple monopodial inflorescence: main axis is drooping, the flowers are sessile, unisexual. Specify the type of inflorescence:
a. Catkin
b. Cyme
c. Panicle
d. Head
e. Capitulum

293. Choose the indicator and titration method to determine hydrogen carbonate ions in a drug:
a. Methyl-orange, alkalimetry
b. Methyl-orange, acidimetry

c. Murexide, acidimetry
d. Phenolphthalein, acidimetry
e. Phenolphthalein, alkalimetry

294. Nitrate anions, unlike nitrite anions, do not interact with:
a. Antipyrine
b. Iron(II) sulfate and sulfuric acid
c. Sulfanilic acid
d. Potassium permanganate
e. Diphenylamine

295. A pharmacy produces eye drops and dispenses them into sterile vials. What method should be used to sterilize the vials?
a. Autoclaving
b. Ultraviolet irradiation
c. Disinfectant solutions
d. Boiling
e. Dry heat box

296. Select from the list an antiprotozoal drug with an anti-Helicobacter pylori effect.
a. Metronidazole
b. Isoniazid
c. Rifampicin
d. Aciclovir
e. Benzylpenicillin sodium salt

297. Microbiological studies of air in the pharmacy room revealed the presence of pathogenic staphylococci. Select the medium in which you can detect the lecithinase activity of the isolated microorganism:
a. Sugar agar
b. Yolk-salt agar
c. Blood agar
d. Bismuth sulfite agar
e. Meat-extract agar

298. A pure culture of movable vibrios was obtained from a patient diagnosed with cholera. What group of flagellates does this agent belong to?
a. Peritrichous
b. Lophotrichous
c. Monotrichous
d. -
e. Amphitrichous

299. A mother with a 6-year-old child came to a local pediatrician. She complains that her child has sore throat and problems with breathing. The doctor suspects laryngeal diphtheria. What external breathing disorder can develop with such localization of the disease?
a. Rapid, shallow
b. Biot respiration
c. Slow, deep, with labored expiration
d. Slow, deep, with labored inspiration
e. Cheyne-Stokes respiration

300. When dosage forms are being tested by accelerated aging method, it is assumed that decomposition reaction of the active substance is of the following order:
a. Zero-order
b. First-order
c. Second-order
d. Third-order
e. Reaction order does not matter

301. Alkaptonuria is characterized by excessive urinary excretion of homogentisic acid. Development of this disease is associated with metabolism disorder of the following amino acid:

a. Asparagine
b. Methionine
c. Alanine
d. Tryptophan
e. Tyrosine

302. Bacterial enzymes typically exhibit a high specificity of their action. In practice, this feature of bacterial enzymes is used for:

a. Bacteria identification
b. Bacteria cultivation
c. Bacteria serotyping
d. Bacteria phage typing
e. Immunoglobulin production

303. A pharmaceutical factory has received a batch of a herbal raw material that, based on the external signs, was affected by a viral disease. What modern method of diagnostics should be used for the specific detection of viral nucleic acids in plants?

a. Enzyme-linked immunosorbent assay
b. Hemagglutination inhibition reaction
c. Hemagglutination reaction
d. Molecular hybridization
e. Indirect hemagglutination reaction

304. Direct complexometric titration is used to determine the concentration of:

a. Weak acid anions
b. Strong acid anions
c. Hydrogen ions
d. Metal cations
e. Hydroxide ions

305. The inflorescence of a plant has an elongated main axis and sessile flowers. What type of inflorescence is it?

a. Corymb
b. Flat capitulum
c. Umbel
d. Round capitulum
e. Spike

306. ACE inhibitors cannot be used simultaneously with a certain group of diuretics. Name this group of diuretics.

a. Loop diuretics
b. Osmotic diuretics
c. Thiazide diuretics
d. Potassium-sparing diuretics
e. Carbonic anhydrase inhibitors

307. The titrant of mercurimetry method is:

a. 0,1mol solution of NH_4SCN
b. 0,1mol solution of NaNO_2
c. 0,1mol solution of AgNO_3
d. 0,1mol solution of Hg_2(NO_3)_2
e. 0,1mol solution of KSCN

308. What analytical effect is observed during fixation of the end point in the Volhard titration?

a. A brown precipitate is produced
b. A yellow precipitate is produced
c. The solution colors yellow

d. A red precipitate is produced

e. The solution colors red

309. Solutions of high-molecular compounds can be precipitated by concentrated electrolyte solutions. Name this process:

a. Salting-out

b. Coacervation

c. Peptization

d. Coagulation

e. Syneresis

310. After obtaining an antitoxic serum, its activity must be determined. For this purpose, one needs to use a reaction that is based on a combination of equal doses of immune serum and anatoxin. Name this reaction.

a. Complement fixation

b. Hemagglutination

c. Flocculation

d. Hemadsorption

e. Precipitation

311. In the process of silver cations identification reaction HCl and then ammonia solution have been added to the solution. What compound has been produced as a result?

a. [Ag_2(NH_3)_3]Cl

b. AgCl

c. [Ag(NH_3)_3]Cl

d. AgOH

e. [Ag(NH_3)_2]Cl

312. In acidimetry, titrants are prepared using the method of determined titer. What substance is used for their standardization according to the State Pharmacopoeia of Ukraine?

a. Metallic zinc

b. Potassium chloride

c. Metallic iron

d. Sodium carbonate

e. Sodium chloride

313. Specify what method of redox titration requires the use of specific indicator - starch - to fix the end point:

a. Permanganatometry

b. Bromatometry

c. Cerimetry

d. Nitritometry

e. Iodometry

314. One of the cations of the 1st group hinders detection of the others. Therefore, it should be detected first and then extracted. Name this cation:

a. Na^+

b. Ca^2+

c. NH^4+

d. K^+

e. Li^+

315. Potentiometry is widely used in the analysis of medicinal products. What type of galvanic cell has the electromotive force that does not depend on the value of the standard electrode potential?

a. Galvanic cell with ion transfer

b. Concentration galvanic cell

c. Galvanic cell without ion transfer

d. Reversible galvanic cell

e. Chemical galvanic cell

316. Microorganisms in the environment are being affected by various physical factors. What is the effect of high temperature on a microbial cell?

a. Transition into anabiosis state

b. Irreversible degradation of all cellular structures

c. Mutagenic effect

d. Albuminolysis

e. Fats saponification

317. A patient has pulmonary edema. What drug must be prescribed in this case to reduce the volume of circulating blood?

a. Nitroglycerin

b. Magnesium sulfate

c. Metoprolol

d. Furosemide

e. Aminazine (Chlorpromazine)

318. Sabin polyvalent oral vaccine is used for planned immunization of children against poliomyelitis. However, this vaccine is absolutely contraindicated for the:

a. Children with recent medical history of infectious diseases

b. Children with congenital or acquired immunodeficiencies

c. Children vaccinated with Salk vaccine

d. Adolescents

e. Preschoolers

319. A unilocular, single-seeded fruit has a pericarp with an exocarp, a juicy mesocarp, and a lignified endocarp. What plant is it characteristic of?

a. Leonurus quinquelobatus

b. Quercus robur

c. Potentilla erecta

d. Coriandrum sativum

e. Armeniaca vulgaris

320. A gastric tea contains small oval brown lignified cone-shaped plant parts up to 1.5 cm in length that can be identified as:

a. Berry-like juniper cones

b. Larch cones

c. Platycladus orientalis cones

d. Aggregate fruits of alnus

e. Cypress cones

321. Non-aqueous acid-base titration is used for the substances that have low solubility in water and weak basic or weak acidic properties. Choose the titrant and medium for titration of substances with weak basic properties.

a. HClO_4 solution in anhydrous acetic acid

b. HCl solution in methanol

c. HCl solution in dioxane

d. HClO solution in anhydrous acetic acid

e. HCl solution in anhydrous acetic acid

322. Potassium dichromate solution is to be analyzed. What physicochemical method of analysis will be used to determine its concentration?

a. Conductometric titration

b. Spectrophotometry

c. Fluorimetry

d. Coulometry

e. Polarimetry

323. A sterile form of Inonotus obliquus xylotrophic fungus was sampled from the trunk of Betula pendula. Its alternative names include ''birch fungus'' and:

a. Champignon
b. Chaga mushroom
c. Ergot
d. Fly agaric
e. Tinder fungus

324. A standard alkali solution is used to determine substances of acidic nature. This method is called:
a. Gravimetry
b. Complexometry (Chelatometry)
c. Acidimetry
d. Alkalimetry
e. Redoxymetry (Oxidimetry)

325. The technology of drug production widely uses the phenomena of absorption and ion exchange. Which of the ions will be selectively adsorbed on the surface of a silver chloride crystal from an aqueous solution?
a. Cu^2+
b. Ag^+
c. OH^-
d. NO_3^-
e. H^+

326. When hydrogen peroxide solution is administered to bleeding wounds, it is broken up by one of the blood enzymes. Point out this enzyme:
a. Lactate dehydrogenase
b. Catalase
c. Aspartate aminotransferase
d. Cytochrome oxidase
e. Monoamine oxidase

327. What titrimetry method allows to determine quantitative content of ascorbic acid using starch as an indicator?
a. Titanometry
b. Permanganatometry
c. Ferrometry
d. Iodimetry
e. Nitritometry

328. Name the initial compound for the synthesis of phthalic acid:
a. o-Xylene
b. 1,2-Dichlorobenzene
c. 2-Chlorobenzoic acid
d. Salicylic acid
e. m-Xylene

329. Cerebrospinal fluid of a patient diagnosed with meningitis was taken for analysis. To detect the causative agent the sample was inoculated in a nutrient medium. Prior to that a serum had been added to the medium. What causative agent is expected to be obtained in this case?
a. Mycobacteria
b. Viruses
c. Meningococcus
d. Staphylococcus
e. Rickettsia

330. A man with signs of glomerulonephritis came to a hospital. What pathological components in his urine indicate the increased permeability of the glomerular membrane?
a. Protein
b. Bilirubin

c. Pus
d. Glucose
e. Acetone

331. Heparin was prescribed as a part of complex therapy for myocardial infarction. This drug belongs to the following group:
a. Coagulants
b. Hormonal preparations
c. Vitamin preparations
d. Detoxifiers
e. Direct anticoagulants

332. A 28-year-old man with peptic ulcer of the stomach was prescribed a drug that inhibits gastric juice secretion. Specify this drug:
a. Lidocaine
b. Duphalac (Lactulose)
c. Fenofibrate
d. Ethacrynic acid
e. Omeprazole

333. Mother of a 10-year-old child came to the pharmacy to obtain a drug for prevention of upper respiratory tract infections. What drug would be recommended by the dispensing chemist?
a. Interferon
b. Carvedilol
c. Benzoteph
d. Doxorubicin
e. Tetracycline

334. When studying a herbarium specimen of Persicaria maculosa, the following diagnostic sign, characteristic of all Polygonaceae family representatives, was noted:
a. Compound leaves
b. Ochrea
c. No petioles
d. Legume fruits
e. Essential oil glands

335. A patient with a cranial trauma has regularly recurring epileptiform seizures. In this case, disturbed metabolism of a certain biogenic amine can be observed. Name this biogenic amine.
a. Cadaverine
b. GABA
c. Adrenaline
d. Indole
e. Putrescine

336. To disinfect a burn surface, an antiseptic was used. When interacting with tissues, this antiseptic releases atomic oxygen and manganese dioxide. What antiseptic was used in this case?
a. Brilliant green
b. Ethyl alcohol
c. Iodine alcohol solution
d. Hydrogen peroxide
e. Potassium permanganate

337. Anionites are the adsorbents that can:
a. Replace their own cations with cations of the medium
b. Adsorb molecules from the medium
c. Replace their own ions with molecules of the medium
d. Adsorb ions from the medium
e. Replace their own anions with anions of the medium

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

a. Decantation
b. Electrodialysis
c. Dialysis
d. Ultrafiltration
e. Compensatory dialysis

339. What compound is added along with the murexide indicator to reach pH>12, when detecting calcium cations?

a. Ammoniac buffer
b. Urotropin
c. Ammonium hydroxide
d. Sodium hydroxide
e. Acetate buffer

340. Natural peptides can carry out various functions. What bioactive peptide is a major antioxidant and functions as a coenzyme?

a. Glutathione
b. Anserine
c. Bradykinin
d. Oxytocin
e. Liberin

341. Quantitative content of oxalic acid can be determined by means of permanganatometry. How to determine equivalence point for this kind of titration?

a. With redox indicator diphenylamine
b. With specific indicator
c. With adsorption indicator
d. When titrate changes its color after another drop of process solution is added
e. With pH indicator

342. Entropy, as one of the main thermodynamic functions, is a measure of:

a. Internal energy of a system
b. Enthalpy
c. Dissipated energy
d. Energy that can be used to perform work
e. Total energy of a system

343. A patient has a gallstone lodged in the common bile duct, which blocks bile supply to the intestine. What digestive process will be disturbed in this case?

a. Protein digestion
b. Carbohydrate digestion
c. Protein absorption
d. Carbohydrate absorption
e. Fat digestion

344. A patient has developed intestinal disbacteriosis after his long-term taking of antibiotics. What drugs should be prescribed to restore microflora up to normal amount?

a. Eubiotics
b. Sulfanilamides
c. Antifungal agents
d. Cephalosporines
e. Interferon

345. A patient has toxic pulmonary edema. What drug must be used for emergency aid in this case?

a. Mannitol
b. Diacarb (Acetazolamide)

c. Hydrochlorothiazide
d. Indapamide
e. Spironolactone

346. Hormones regulate numerous metabolic processes. What hormone activates glycogen synthesis?
a. Thyroxine
b. Adrenaline
c. Vasopressin
d. Insulin
e. Oxytocin

347. Mass fraction of pharmaceutical preparations that contain aromatic amino groups is defined through nitrite titration. What external indicator is used in this case?
a. Phenolphthalein
b. Eriochrome Black T
c. Methylene red
d. Starch-iodide paper
e. Eosin

348. What antibiotic is a drug of choice for treatment of syphilis?
a. Levorin sodium salt
b. Lincomycin hydrochloride
c. Polymyxin M sulfate
d. Streptomycin sulfate
e. Benzylpenicillin sodium salt (Penicillin G sodium salt)

349. Enzyme activity is measured to diagnose diseases of the pancreas. What enzyme must be used in acute pancreatitis?
a. Deoxyribonuclease
b. Aldolase
c. Amylase
d. Alanine aminotransferase
e. Ribonuclease

350. Azo dyes are produced as the result of:
a. Nitration
b. Nitrosation
c. Diazotization
d. Azo coupling
e. Amination

351. An injured person exhibits the following signs at the site of trauma: skin redness, throbbing small arteries, elevated local temperature, increased tissue turgor. What local blood circulation disorder are these presentations typical of?
a. Embolism
b. Ischemia
c. Venous hyperemia
d. Thrombosis
e. Arterial hyperemia

352. Asepsis, antiseptics, disinfection, and sterilization are widely used in pharmaceutical practice. What is the correct definition of the term "asepsis"?
a. The use of substances that kill pathogenic microbes in the internal environment of the body
b. Preventing microbes from contaminating any object
c. Destruction of pathogenic microbes in the environment
d. The use of substances that kill microorganisms on the skin and mucosa
e. Complete destruction of all forms of microbes in an object

353. During a surgery, narcosis overdose caused signs of acute hypoxia, indicated by increased heart

rate of 124/min. and tachypnea. What type of hypoxia is observed in this case?
a. Tissue
b. Mixed
c. Circulatory
d. Respiratory
e. Hypoxic

354. A patient with tuberculosis has been prescribed some anti-tuberculosis preparations. Which of the following chemotherapeutic drugs has an effect on the tuberculosis pathogen?
a. Sulfadimezinum
b. Furacilinum
c. Methisazonum
d. Phthalylsulfathiazole
e. Ftivazide

355. Hemoglobin breakdown begins in the cells of reticuloendothelial system. What enzyme catalyzes the reduction reaction of biliverdine into bilirubin?
a. Biliverdine reductase
b. Xanthine oxidase
c. Hexokinase
d. Heme oxygenase
e. beta-glucuronidase

356. A solution being analyzed contains calcium chloride and sodium bromide. What solution must be added to the solution being analyzed, to identify the calcium ions?
a. Barium chloride
b. Ammonium oxalate
c. Sodium chloride
d. Potassium iodide
e. Ammonium acetate

357. A doctor prescribed diazepam to a patient with anxiety disorders. What pharmacological effect of the drug is the cause of such a prescription?
a. Anxiolytic
b. Anti-inflammatory
c. Anticonvulsant
d. Hypotensive
e. Antianginal

358. What anticholinesterase agent is used to stimulate intestinal peristalsis in the patients during the postoperative period?
a. Salbutamol
b. Adrenaline hydrochloride
c. Prozerin (Neostigmine)
d. Metoprolol
e. Dithylin (Suxamethonium)

359. Examination of an underground organ of Poligonatum odoratum shows that it is horizontally oriented, uniformly thick and has nodes, internodes, round indentations, and an apical bud. Therefore, it is a:
a. Root tuber
b. Underground stolon
c. Rhizome
d. Main root
e. Root crop

360. 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. Dyes

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

361. The study of home-made canned vegetables revealed growth of microorganisms with the shape that resembled a tennis racket after inoculation on the Kitt-Tarozzi medium. What disease can be caused by these pathogens?
a. Shigellosis
b. Botulism
c. Cholera
d. Escherichiosis
e. Salmonellosis

362. Molar attenuation coefficient is the optical density of a solution with absorbent layer 1 cm thick and concentration that equals:
a. 1 g/mL
b. 1%
c. 1 g/L
d. 0.1 mol/L
e. 1 mol/L

363. A stool sample obtained from a patient with suspected shigellosis was inoculated on the Ploskirev nutrient medium. What will be the color of the colonies of the dysentery pathogen in this medium?
a. Dark brown
b. Red with a metallic sheen
c. Colorless
d. Yellow
e. Blue-violet

364. Heparin is a direct-acting anticoagulant that decreases blood clotting and prevents formation of the thrombus. This substance activity is based on the phenomenon of:
a. Micelle formation
b. Dialysis
c. ''Colloidal protection''
d. Thixotropy
e. Syneresis

365. In cases of long-term intoxication, a significant decrease in the activity of aminoacyl-tRNA synthetases can be observed. What metabolic process becomes disturbed in such cases?
a. Biosynthesis of proteins
b. DNA repair
c. RNA processing
d. Genetic recombination
e. DNA replication

366. What compound is formed as a result of interaction between aniline and concentrated sulfuric acid in a high-boiling solvent and is a structural fragment of a large group of medicines?
a. Uric acid
b. Salicylic acid
c. Gamma-aminobutyric acid
d. Methylamine
e. Sulfanilic acid

367. The pharmacopoeial method of determining the purity of antibiotics, vitamins, etc. requires studying the movement of the dispersed phase particles in a stationary dispersion medium under the effect of a difference in potentials. Name this phenomenon.
a. Electroosmosis

b. Sedimentation potential
c. Electrophoresis
d. Brownian motion
e. Streaming potential

368. What reaction can be used to distinguish propyne from propene?
a. Wurtz's reaction
b. Decoloration of bromine water solution
c. Decoloration of KMnO_4 solution
d. Formation of acetylenides
e. Polymerization

369. Endocrinological analysis detects growth hormone deficiency in a schoolboy. What pathology can develop in the child?
a. Adiposogenital dystrophy
b. Pituitary gigantism
c. Pituitary nanism
d. Pituitary cachexia
e. Acromegaly

370. What is the taxonomic division of a plant with periphloematic fibrovascular bundles that were detected during the study of the anatomical structure of its rhizome?
a. Angiosperms
b. Polypodiophyta
c. Bryobionta
d. Green algae
e. Gymnosperms

371. What parameter is determined during a blood test for erythrocyte sedimentation rate?
a. -
b. Kinetic stability
c. Sedimentation stability
d. Coagulation threshold
e. Aggregate stability

372. A pathological process in the blood serum has caused increased ammonia levels. What is the main way of toxic ammonia neutralization?
a. Urea synthesis
b. Alanine synthesis
c. Uric acid synthesis
d. Ammonium salt synthesis
e. Glycine synthesis

373. What electrophilic reagent is used for sulfonation of pyrrole and furan?
a. Oleum
b. Pyridine-sulfur trioxide complex
c. Mixture of sulfuric acid and nitric acid
d. Diluted sulfuric acid
e. Concentrated sulfuric acid

374. A certain infection leads to fetus malformation if a pregnant woman is affected. What vaccine should be used for prevention of this infection?
a. Antirabic vaccine
b. Influenza virus vaccine
c. Rubella virus vaccine
d. Mumps vaccine
e. Poliovirus vaccine

375. Digestive enzymes produced in pancreas are inactive. What enzyme in intestines starts the

transformation process of proenzymes into enzymes?
a. Amylase
b. Enterokinase
c. Lactase
d. Aminopeptidase
e. Chymotrypsin

376. When dividing cations into analytical groups according to the acid-base classification, the group reagents can be acids or bases. What acids are used as group reagents?
a. HNO_3, CH_3COOH
b. H_2CO_3
c. HClO_4
d. HCl, H_2SO_4
e. H_3PO_4, H_2C_2O_4

377. In the patient's blood, increased activity of AST, LDH1, LDH2, and CPK was detected. In what organ is a pathological process possible in this case?
a. Heart muscle
b. Liver
c. Skeletal muscles
d. Kidneys
e. Adrenal glands

378. Enzymes accelerate biochemical reactions by over 10^8 times. What equation describes the rate of enzymatic catalysis?
a. Van't Hoff isotherm equation
b. Van't Hoff equation
c. Law of mass action
d. Arrhenius equation
e. Michaelis-Menten equation

379. What fruits are apocarpous?
a. Apple, acorn
b. Cremocarp, disk-shaped schizocarp
c. Bean, single nutlet
d. Capsule, berry
e. Aggregate drupe, follicetum

380. What drug must be prescribed to treat a patient with malaria?
a. Chloramine
b. Chingamine (Chloroquine)
c. Tetracycline
d. Sulfamethoxazole
e. Ceftriaxone

381. During practical field session students have detected plant with diversity of leaves that differ by their placement on stem, parts development, size, shape, lamina division. This phenomenon is called:
a. Metamorphosis
b. Heterophylly
c. Venation
d. Phyllotaxy
e. Leaf mosaic

382. Select lyophilic systems among the dispersion systems listed below.
a. Solid foams
b. Surfactant solutions
c. Suspensions
d. Emulsions
e. Sols

383. A patient has developed an allergic skin reaction in the form of urticaria after using an antibiotic to treat pneumonia. What antihistamine is indicated in this case?
a. Raunatine (Rauwolfia alkaloids)
b. Tannin
c. Prednisolone
d. Loratadine
e. Ranitidine

384. A certain dioecious plant commonly grows at the forest edge. It is a shrub with thorned sprouts. Its fruit is a round black coenocarpous drupe (pyrenarium) with 3-4 seeds. Name this plant:
a. Crataegus sanguinea
b. Rosa canina
c. Sambucus nigra
d. Rhamnus cathartica
e. Hippophae rhamnoides

385. Throughout the last year, a 2-year-old child had frequent infectious diseases of a bacterial genesis with a protracted course. Study of the patient's immunogram detected hypogammaglobulinemia. What cells are most likey to be dysfunctional in this case, causing these clinical presentation and laboratory findings?
a. B lymphocytes
b. Phagocytes
c. Macrophages
d. Killer T cells
e. NK cells

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

387. A patient developed an atrioventricular block. What drug is indicated in this case?
a. Atropine
b. Clophelin (Clonidine)
c. Anaprilin (Propranolol)
d. Pirenzepine
e. Metoprolol

388. Disintegration of adenosine nucleotides results in release of ammonia. What enzyme plays the key role in ammonia synthesis from these compounds?
a. Amylase
b. Alcohol dehydrogenase
c. Lactate dehydrogenase
d. Adenosine deaminase
e. Alanine transaminase

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

390. Quantitative content of hydrogen peroxide can be determined by means of the following self-indicator method:

a. Argentometry
b. Iodometry
c. Nitritometry
d. Bromatometry
e. Permanganatometry

391. A patient with epilepsy was prescribed sodium valproate. What is the mechanism of action of this drug?
a. Stimulation of opioid receptors
b. Stimulation of alpha-adrenergic receptors
c. Stimulation of butyrylcholinesterase activity
d. Stimulation of beta-adrenergic receptors
e. Increasing GABA levels in the brain

392. Certain amino acids decarboxylate in large intestine producing toxic substances. What compound is produced from ornithine?
a. Arginine
b. Phenol
c. Lysine
d. Putrescine
e. Indole

393. Most often, the quantitative content of primary and secondary aromatic amines in drugs is determined using the following method:
a. Nitritometry
b. Titanometry
c. Ascorbinometry
d. Cerimetry
e. Permanganatometry

394. Morphologically the herbaceous plant being studied can be identified as Convallaria majalis. To confirm this conclusion additionally, a leaf of this plant was examined under the microscope and a search for the following crystalline inclusions was conducted:
a. Single crystals
b. Crystal sand
c. Druse crystals
d. Raphides
e. Styloid crystals

395. A girl with type 1 diabetes mellitus has developed chronic kidney failure. What complication of diabetes is the cause of diabetic nephropathy in this case?
a. Macroangiopathy
b. Fetopathy
c. Microangiopathy
d. Retinopathy
e. Neuropathy

396. A person has extremely pale skin, white hair, and blue semi-transparent irises that under bright light assume a pink hue. These signs are caused by insufficient synthesis of the following in the patient's body:
a. Melanin
b. Cholesterol
c. Phenylalanine
d. Serine
e. Glucose

397. Plantago major inflorescence grows at the apex, its rachis is long, with sessile flowers. Name this type of inflorescence:
a. Spike

b. Capitulum
c. Thyrse
d. Spadix
e. Panicle

398. A patient was urgently brought to the infectious diseases hospital. The patient developed severe neurologic disorders 4 hours after he had eaten canned fish. A filtrate was prepared from the remains of this food product and given intraperitoneally to a guinea pig. 3 hours later the animal died. What disease can be suspected?
a. Typhoid fever
b. Botulism
c. Brucellosis
d. Q fever
e. Salmonellosis

399. Crystalline lead(IV) dioxide in the presence of concentrated nitric acid is used to detect the presence of manganese(II) cations in a solution. What visual analytical effect is observed in the process?
a. The solution colors pink
b. The solution colors yellow
c. The solution colors green
d. A blue precipitate is formed
e. A white precipitate is formed

400. What method can be used to determine the moisture content in thermally unstable preparations?
a. Iodometric method
b. Non-aqueous titration using the Fischer's method
c. Bromatometric method
d. Nitritometric method
e. Permanganatometric method

401. A patient who had been suffering from peptic ulcer disease of the stomach for a long time has cachexia, pallor, weakness, loss of appetite, and aversion to meat products. Biopsy of the gastric mucosa detected cellular anaplasia. What pathology can be characterized by such symptoms?
a. Hypertrophic gastritis
b. Malignant gastric tumor
c. Benign gastric tumor
d. Ulcer penetration
e. Gastric polyposis

402. Solutions of colloidal surfactants are typical representatives of lyophilic dispersion systems. What is a characteristic feature of colloidal surfactants?
a. Non-ionogenicity
b. Non-polarity
c. Amphiphilicity (Diphilicity)
d. Ionogenicity
e. Polarity

403. Sol Al(OH)_3 was produced as a result of treatment of freshly prepared Al(OH)_3 precipitate with a small amount of HCl solution. What phenomenon underlies the sol production?
a. Mechanical dispersion
b. Physical condensation
c. Washing with a solvent
d. Chemical condensation
e. Chemical peptization

404. A child had been administered antidiphtheric serum. What resistance was formed in the child?
a. Active

b. Pathological
c. Passive
d. Physiological
e. Primary

405. A 22-year-old male was stung by bees, the affected region became hyperemic and edematous. What is the leading mechanism of edema development in this patient?
a. Increased permeability of the capillaries
b. Impaired lymphatic efflux
c. Decreased hydrostatic blood pressure in the capillaries
d. Increased oncotic pressure of tissue fluid
e. Reduced oncotic pressure of blood

406. Examination of a patient detects excessive growth of bones and soft tissues of the face, enlarged tongue and internal organs, and widened interdental spaces. The patient's condition could have been caused by increased secretion of a certain hormone. Name this hormone.
a. Adrenaline
b. Vasopressin
c. Thyroxine
d. Prolactin
e. Somatotropin

407. A female patient with mycoplasmal pneumonia was prescribed doxycycline. What group of antibiotics does this drug belong to?
a. Macrolides
b. Lincosamides
c. Tetracyclines
d. Penicillines
e. Cephalosporines

408. What test is used for identification of uric acid and other compounds with purine nucleus?
a. Silver mirror reaction
b. Murexide reaction
c. Lucas reagent
d. Copper mirror reaction
e. Fehling reagent

409. A patient with diabetes mellitus presents with thirst, polyuria, and dry skin and mucosa. These signs are caused by the elevated levels of the following substance in the patient's blood:
a. Cholesterol
b. Adrenaline
c. Phenylalanine
d. Glucose
e. Urates (uric acid salts)

410. A Polygonaceae family plant has elongated lanceolate leaves with ochreae and brown spots on the upper surface of the leaf blade. These features are characteristic of:
a. Leonurus quinquelobatus
b. Polygonum hydropiper
c. Polygonum aviculare
d. Hypericum perforatum
e. Polygonum persicaria

411. What kind of ground (functional) tissue is characteristic of above-ground organs of succulent plants, Cactaceae in particular?
a. Spongy parenchyma
b. Folded parenchyma
c. Starch storage parenchyma
d. Aerenchyma

e. Hydroparenchyma

412. To determine a certain second group cation, the <<golden rain>> reaction is used with slow cooling of the preheated reagents. What reaction product is formed during the slow precipitation?
a. $PbCl_2$
b. HgI_2
c. PbI_2
d. Hg_2I_2
e. AgI

413. The structure of the bacterial cell that provides microbes with increased resistance to the environmental factors and can remain intact for a long time can be detected by staining a smear according to the Ozheshko technique. What is this structure called?
a. Capsule
b. Flagella
c. Plasmid
d. Spore
e. Pilus

414. What causes the dry cough that developed in a patient who has been taking lisinopril for a long time to treat her essential hypertension?
a. Inhibition of angiotensin receptors
b. Decreased renin levels
c. Depletion of the noradrenaline reserves
d. Increased bradykinin levels
e. Accumulation of angiotensin II

415. Air contamination with pathological microorganisms can be determined by the presence of indicator bacteria. Specify the bacteria that indicate immediate epidemiologic danger:
a. Hemolytic streptococci
b. Mold fungi
c. Yeast fungi
d. Sarcinae
e. Micrococci

416. After ishemic stroke the patient was prescribed a drug to improve his intellectual functioning and memory. What drug would he obtain in the pharmacy?
a. Piracetam
b. Tabex (Cytisine)
c. Diphenin (Phenytoin)
d. -
e. Metoclopramide

417. Human body assimilates fats only as emulsions. Vegetable oils and animal fats contained in food are emulsified when exposed to bile (an emulsifier). How does interface tension change in this case?
a. Remains unchanged
b. Decreases
c. First increases, than decreases
d. First decreases, than increases
e. Increases

418. Corolla of a zygomorphic monoecious flower consists of 5 petals, the biggest is "banner", two lateral are "wings", and the last two are fused together to form "keel". Name the described corolla that is characteristic of medicinal plants of the Fabaceae family.
a. Funnelform
b. Tubular
c. Saucer-shaped
d. Ligulate
e. Papilionaceous

419. A child presents with increased nervous excitability, spontaneous tetany attacks, dry skin, brittle nails and hair, and subcutaneous calcifications in the area of the auricles. What hormone is deficient in this case, causing the described changes?

a. Vasopressin
b. Parathyroid hormone
c. Thyroid hormones
d. Oxytocin
e. Progesterone

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

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

421. On the surface of a crystalline substance predominantly those ions are adsorbed that compose the crystalline lattice or are isomorphous to its ions, forming in the process a hard-to-dissolve compound with crystalline ions. Name the author (authors) of this rule:

a. Rehbinder
b. Van 't Hoff
c. Duclaux, Traube
d. Schulze, Hardy
e. Paneth, Fajans

422. What reagent is used to detect and photometrically determine Fe(II) and Fe(III) cations?

a. P-aminobenzoic acid
b. Sulfosalicylic acid
c. Phenylacetic acid
d. Oxalic acid
e. Chloroacetic acid

423. Silver nitrate solution was added into a solution with anions of the first analytical group. A yellow precipitate was produced as the result, which indicates that this solution contained:

a. Arsenite ions
b. Bromide ions
c. Iodide ions
d. Arsenate ions
e. Sulfate ions

424. In nitritometry, titrant is a 0.1 M solution of sodium nitrite that is prepared as a secondary standard solution. What acid is used to determine the exact concentration of sodium nitrite?

a. Oxalic
b. Sulfuric
c. Hydrochloric
d. Sulfanilic
e. Acetic

425. Aldehyde dehydrogenase inhibitors are widely used in the treatment of alcohol dependence. What metabolite causes the feeling of disgust towards alcohol, if its blood level is elevated?

a. Acetaldehyde
b. Fructose
c. Cholesterol
d. Methanol
e. Glucose

426. Examination of a child revealed enlarged abdomen, curved legs, increased excitability of the nervous system, and increased excretion of phosphates with the urine. Deficiency of what food

component can cause such clinical changes?
a. Vitamin A
b. Vitamin F
c. Vitamin K
d. Vitamin C
e. Vitamin D

427. Lipid digestion requires lipases, emulsifiers, and a slightly alkaline pH. What segment of the gastrointestinal tract provides these conditions?
a. Oral cavity
b. Esophagus
c. Stomach
d. Duodenum
e. Large intestine

428. Trypsin is a proteolytic enzyme used to clean purulent wounds. Combined with water, it causes the breakdown of complex organic compounds (proteins, peptides) into simpler ones. According to the modern international Nomenclature and Classification of Enzymes, trypsin belongs to:
a. Isomerases
b. Hydrolases
c. Transferases
d. Oxidoreductases
e. Ligases

429. Microcrystalloscopy reaction for detecting potassium ions is the following one:
a. Flame colour test
b. With sodium hexanitrocobaltate
c. With sodium tetraphenylborate
d. With sodium hydrotartrate
e. With sodium lead (II) hexanitrocuprate

430. Interleukin-1 is one of the secondary pyrogens in a fever. What cells are the main producers of this pyrogen?
a. Eosinophils
b. Macrophages
c. Tissue basophils
d. Lymphocytes
e. Platelets

431. A laboratory has received a sample of copper(II) sulfate pentahydrate. Choose the method for quantification of copper(II) in copper sulfate.
a. Alkalimetry
b. Permanganatometry
c. Argentometry
d. Iodometry
e. Acidimetry

432. What must be used to obtain a stable direct emulsion?
a. Lead stearate
b. Hydrophobic emulsifier
c. Calcium oleate
d. Hydrophilic emulsifier
e. Any emulsifier

433. A certain part of the primary structure of a root has cells with Casparian strips, impregnated with suberin. What tissue of the primary structure of a root contains these cells?
a. Endodermis
b. Pericycle
c. Epiblem

d. Exodermis
e. Mesodermis

434. A patient presents with temperature 38.5-39.5^oC, nausea, vomiting, and stomachache. Poisoning with salts of heavy metals is diagnosed. What drug should be prescribed as an antidote in this case?
a. Validol (Menthyl isovalerate)
b. Bromhexine
c. Pentazocine
d. Unithiol
e. Phenolphthalein

435. Having matured, pistillate catkins of Betula penduta fall apart freeing nutlet seeds with:
a. Villous coma
b. Bristly hooks
c. Two air vesicles
d. One large wing petal
e. Two membranous wing petals

436. A patient with symptoms of cardiac glycosides intoxication is prescribed Unithiol (Dimercaprol). What is the drug's mechansm of action?
a. Induction of cardiac glycosides metabolism
b. Increase of K^+ penetration of myocardiocytes
c. Reactivation of membrane K^+, Na^+-adenosinetriphosphatase
d. Binding ionized Ca^2+
e. Increase of Na^+ content in myocardium

437. A 5-year-old boy has stomachache, diarrhea with mucus and blood admixtures in the stool, and a fever of 38.0^oC) Bacteriological stool test detected Shigella flexneri. What disease is it?
a. Nonspecific ulcerative colitis
b. Yersiniosis
c. Dysentery
d. Salmonellosis
e. Typhoid fever

438. Gypsum water is added to a test solution for analytical determination of barium ions. What visual effect is observed in this case?
a. Production of a brown gas
b. Formation of a blue precipitate
c. A characteristic odor appearing
d. Formation of a white precipitate
e. Yellow coloring of the solution

439. Cellulose hydrolysis produces the following disaccharide:
a. Maltose
b. Cellobiose
c. Lactose
d. Sucrose
e. Glucose

440. Ultramicroscopy is used to determine the radius of dispersed phase particles. The following should be measured to make the necessary calculations:
a. Number of particles in a definite volume
b. Time interval in which a tagged particle travels a certain distance
c. Intensity of transmitted light
d. Distance traveled by a tagged particle
e. Intensity of scattered light

441. To identify a drug by thin-layer chromatography the following parameter is used:

a. I, A
b. n
c. E, mV
d. R_f
e. K_p

442. In qualitative analysis, a reaction with an iodine solution is used to detect arsenite ions. What is used to create the medium for this purpose?
a. Sulfuric acid solution
b. Nitric acid solution
c. Acetic acid solution
d. Saturated solution of sodium hydrogencarbonate
e. Ammonia solution

443. Wheat has linear inflorescences with biflorous sessile spikelets arranged in two rows. Name this type of inflorescence:
a. Spike
b. Corymb
c. Spadix
d. Panicle
e. Compound spike

444. Examination of a patient by a neurologist has detected the presence of ataxia in the patient. What signs are characteristic of this nervous system disorder?
a. Excessive movements
b. Impaired temporal and spatial movement orientation
c. Impaired initiation and planning of movements
d. No movements in one half of the torso
e. No movements in the upper limbs

445. Microscopy of subterranean organs of an Asteraceae family plant shows articulated laticifers with anastomoses filled with white latex. It is characterisic of the following plant:
a. Helianthus annuus
b. Bidens tripartita
c. Taraxacum officinale
d. Achillea millefolium
e. Artemisia absinthium

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

447. What forms of erythrocytes will be observed in a case of B_12 deficiency anemia?
a. Annulocytes (Codocytes)
b. Microcytes
c. Ovalocytes
d. Normocytes
e. Megalocytes

448. To obtain water-soluble iodine preparations (iodoforms), iodine is dissolved in surfactants that form micelles. The process, when compounds that are insoluble in a certain solvent, spontaneously dissolve in the micellar systems, is called:
a. Sedimentation
b. Solubilization
c. Adsorption
d. Neutralization

e. Coagulation

449. A 40-year-old man with allergic rhinitis has come to the dispensing chemist. He wants to substitute dimedrol (diphenhydramine), that he currently takes, with another antihistamine because dimedrol makes him drowsy and unable to concentrate. What drug would the dispensing chemist recommend?

a. Analgin (Metamizole)
b. Laferon (Interferon alfa-2b)
c. Retabolil (Nandrolone)
d. Aevit (Vitamins A and E)
e. Loratadine

450. A bulbous plant with specific odor has basal leaf arrangement; the leaves are cylindrical and fistulose. Its peduncle bears a simple umbel inflorescence with membranous indusium. Its fruit is a capsule. These features of the plant indicate that it belongs to the following species:

a. Allium cepa
b. Convallaria majalis
c. Agropyron repens
d. Allium sativum
e. Acorus calamus

451. Illegal emigrants from Somalia were detained at the Ukrainian border. During medical examination, their 3-year-old child presents with muscle hypotonia and dystrophy, skin depigmentation, decreased turgor, and enlarged abdomen. The child is underweight. The diagnosis of kwashiorkor was made. This pathology is a type of partial starvation, namely the deficiency of:

a. Proteins
b. Carbohydrates
c. Lipids
d. Vitamins
e. Energy

452. What will be the order of the reaction if one of the reagents participating in a bimolecular reaction was taken in a large excess?

a. The order would be greater than the molecularity
b. The order can be determined based on the substance taken in excess
c. Pseudomonomolecular order
d. The order would be the same as the molecularity
e. Third order

453. What chemotherapeutic agent is a drug of choice for treatment of herpes?

a. Metronidazole
b. Rifampicin
c. Acyclovir
d. Doxycycline hydrochloride
e. Chingamin

454. A patient consulted a doctor about sunburns, decreased visual acuity. His hair, skin and eyes are not pigmented. He has been diagnosed with albinism. The patient presents with the following enzyme deficiency:

a. Histidine decarboxylase
b. Hexokinase
c. Tyrosinase
d. Carbonic anhydrase
e. Arginase

455. What analytical effect is observed when a solution that contains acetate ions is heated with ethyl alcohol and concentrated sulfuric acid?

a. Formation of a black precipitate
b. Release of a characteristic odor

c. Formation of a white precipitate
d. Formation of a yellow precipitate
e. Formation of a blue precipitate

456. When studying five herbarium specimens of medicinal plants, it was determined that one of them belongs to Fabaceae family. Which one is it?
a. Datura stramonium
b. Atropa belladonna
c. Hyoscyamus niger
d. Solanum dulcamara
e. Ononis arvensis

457. Pathogenic microorganisms produce various enzymes in order to penetrate body tissues and spread there. Point out these enzymes among those named below:
a. Lyase, ligase
b. Esterase, protease
c. Hyaluronidase, lecithinase
d. Transferase, nuclease
e. Oxydase, catalase

458. A patient with a hypertensive crisis was administered magnesium sulfate, which resulted in a sharp drop of the patient's blood pressure. What drug can be used in this case to eliminate the side effects of magnesium sulfate?
a. Trilon B (EDTA disodium salt)
b. Potassium chloride
c. Calcium chloride
d. Sodium sulfate
e. Sodium bromide

459. Specify the analgesic that affects opiate receptors and can cause development of tolerance and dependence:
a. Morphine
b. Haloperidol
c. Phenobarbital
d. Voltaren (Diclofenac sodium)
e. Medazepam

460. To isolate a pure culture of the disease's pathogen, its specific biological properties were used: growth at low temperatures, type of respiration, pathogenicity for laboratory animals, growth on selective nutrient media, and the ability for "creeping growth" on the surface of the medium. What microbial culture is expected to be isolated in this case?
a. Enterococcus faecalis
b. Proteus vulgaris
c. Yersinia pestis
d. Staphylococcus aureus
e. Pseudomonas aeruginosa

461. A fruit tree of Rosaceae family has short thorny shoots; the fruit is a distinctively-shaped pome with stone cells in its pulp. Name this plant:
a. Prunus spinosa
b. Pyrus communis
c. Prunus armeniaca
d. Cerasus vulgaris
e. Malus sylvestris

462. Microscopy of a leaf of a heliophyte plant detects several dense layers of elongated chlorophyll-containing cells that are located under the epidermis. These cells are oriented perpendicular to the surface of the leaf. What type of parenchyma is it?
a. Storage parenchyma

b. Folded parenchyma
c. Spongy parenchyma
d. Palisade parenchyma
e. Water-storage parenchyma

463. Proteins carry out various extremely important functions in the human body. Actin and myosin perform the following function:
a. Contractile (motor)
b. Transport
c. Regulatory
d. Receptor
e. Cogenetic

464. Name the structural unit of a colloidal solution of a medicinal substance:
a. Ion
b. Zwitterion
c. Atom
d. Molecule
e. Micelle

465. Friedel-Crafts alkylation takes place in the presence of catalysts - Lewis acids. What compounds are included in the list of Lewis acids?
a. AlCl_3, FeBr_3
b. H_2SO_4, HNO_3
c. H_2O, H_2O_2
d. KMnO_4, Na_2S_2O_3
e. KOH, CaO

466. A specialist of the analytical laboratory performs direct iodometric determination of ascorbic acid. What indicator is used in this case?
a. Methyl red
b. Methyl orange
c. Phenolphthalein
d. Starch
e. Diphenylamine

467. A 36-year-old man has no hydrochloric acid or pepsin in his gastric juice. What is this condition called?
a. Achlorhydria
b. Cholemia
c. Hyperchlorhydria
d. Achylia
e. Hypochlorhydria

468. Specific reactions used in qualitative analysis make it possible to:
a. Detect an ion without previous separation of other ions
b. Detect only anions
c. Detect an ion with previous separation
d. Detect only cations
e. Detect only a certain group of ions

469. A patient with a joint disorder was prescribed an ointment that contains as its active substance a certain glycosaminoglycan that is the most important component of cartilage. Name this glycosaminoglycan:
a. Heparin
b. Chondroitin sulfate
c. Starch
d. Arabinose
e. Glycogen

470. In cases of systemic connective tissue diseases, protein and polysaccharide fragments of the connective tissue become destroyed. What protein is the main component of this tissue?
a. Keratin
b. Collagen
c. Myosin
d. Actin
e. Albumin

471. Inheritable genetic disorders can result in disturbed enzyme synthesis in the human body. What enzyme deficiency results in disturbed break-up of lactose:
a. Peptidase
b. Maltase
c. Lactase
d. Invertase
e. Lipase

472. What method is used for the quantification of bismuth in a preparation?
a. Argentometry
b. Permanganatometry
c. Iodometry
d. Mercurimetry
e. Complexonometry

473. An iodine solution was prepared using the method of established titer. What primary standards can be used for the standardization in this case?
a. Hydrazine sulfate and arsenic(III) oxide
b. Potassium dichromate and potassium bromate
c. Metallic iron and iron(II) sulfate
d. Ammonium oxalate and oxalic acid
e. Sodium tetraborate and sodium carbonate

474. Pharmacopoeia reaction of potassium ferrocyanide with zinc cations produces:
a. Black precipitate
b. Red precipitate
c. Yellow precipitate
d. White precipitate
e. Violet precipitate

475. Vitamin B_6 is a part of the pyridoxal phosphate coenzyme (PLP). What reactions involve PLP?
a. Synthesis of ketone bodies and bile acids
b. Decarboxylation and transamination of amino acids
c. Synthesis of steroid hormones and cholesterol
d. Synthesis of nucleic acids and phospholipids
e. Synthesis of bile acids and cholesterol

476. In hypoxia, lactic acid accumulates in the blood. Name the end product of anaerobic glycolysis.
a. Lactate
b. Malate
c. CO_2 and H_2O
d. Alanine
e. Oxaloacetate

477. A 9-year-old child due to acute bronchitis developed elevated body temperature up to 38.5^oC that lasted for a week and was then followed by a drop in the temperature down to 37.0^oC) What mechanism is leading at the 3rd stage of fever?
a. Increased heat production
b. Increased respiration rate
c. Increased diuresis
d. Development of chills

e. Peripheral vasodilation

478. A woman with essential hypertension developed a dry hacking cough as a result of taking angiotensin-converting enzyme inhibitors. What drugs that inhibit the renin-angiotensin system should be prescribed in this case?

a. Calcium channel blockers
b. Angiotensin II receptor antagonists
c. Beta-blockers
d. Sympatholytics
e. Diuretics

479. During a practical skill-building session, in the Konheim experiment, a student observes the dynamics of vascular reactions and changes in the blood circulation in an inflammatory focus. Name the correct sequence of the stages, characteristic of acute inflammation development:

a. Venous hyperemia, stasis, spasm of arterioles, arterial hyperemia, prestasis
b. Prestasis, stasis, spasm of arterioles, arterial hyperemia, venous hyperemia
c. Venous hyperemia, arterial hyperemia, prestasis, stasis, spasm of arterioles
d. Spasm of arterioles, arterial hyperemia, venous hyperemia, prestasis, stasis
e. Arterial hyperemia, venous hyperemia, prestasis, stasis, spasm of arterioles

480. Causative agents of infectious diseases can be carried both by humans and animals. Name the group of infections that affect animals and can be passed onto humans:

a. Anthroponoses
b. Sapronoses
c. Mixed
d. Zoonoses
e. Zooanthroponoses

481. A Poaceae plant has linear leaves with several non-branching veins that are parallel to the edge of the lamina, which indicates the following type of leaf venation:

a. Dichotomous
b. Pinnate
c. Arcuate
d. Palmate
e. Parallel

482. Megaloblasts and a high color index were detected in the patient's blood. The diagnosis of megaloblastic anemia was established. What drug should be prescribed in this case?

a. Cyanocobalamin
b. Ascorbic acid
c. Rutin
d. Tocopherol acetate
e. Pyridoxine

483. What drug should be prescribed to inhibit the synthesis of thyroid hormones?

a. Mercazolil (Thiamazole)
b. Antistrumin (potassium iodide)
c. Parathyroidin
d. L-thyroxine
e. Thyroidin

484. Dysbiosis can be treated with drugs that contain living representatives of normal microflora as well as their metabolic products. Select the microorganisms that are used for the production of such drugs:

a. Yersinia
b. Bifidus bacteria
c. Staphylococcus aureus
d. Proteus
e. Providencia

485. Which of the amines listed below is a primary amine?
a. C_6H_5N(CH_3)_2
b. C_6H_5CH_2NH_2
c. C_6H_5NHCH_3
d. C_6H_5CH_2N(CH_3)_2
e. C_6H_5CH_2NHCH_3

486. Prosenchyma cells with framed pores in their membranes were detected during microscopy of raw material fragment. Such cells are characteristic of the following tissues:
a. Storage tissue
b. Conducting tissue
c. Integumentary tissue
d. Strengthening tissue
e. Growth tissue

487. An oncological patient was prescribed fluorouracil that is a competitive inhibitor of thymidine synthase. It inhibits the process of:
a. Purine nucleotides synthesis
b. Lipids synthesis
c. Pyrimidine nucleotides synthesis
d. Carbohydrate disintegration
e. Purine nucleotides disintegration

488. A man with left ventricular heart failure and signs of developing pulmonary edema was brought into an emergency hospital. What is the primary pathogenetic mechanism of the developed edema in this case?
a. Toxic
b. Membranogenic
c. Hydrodynamic
d. Lymphogenic
e. Colloidal-osmotic

489. Anticholinesterase agents have an effect on neuromuscular transmission and on the tone and motility of the gastrointestinal tract and urinary bladder. What drug is a synthetic representative of this group of drugs?
a. Galantamine hydrobromide
b. Prozerin (Neostigmine)
c. Physostigmine salicylate
d. Dipyroxime (Trimedoxime bromide)
e. Isonitrozine

490. A pharmacy network is supplied with significant amount of sterile medical products (bandages, rubber gloves, catheters, etc.). What ensures their sterility during manufacturing?
a. Gamma irradiation
b. Ultraviolet irradiation
c. Infrared irradiation
d. Alpha irradiation
e. Beta irradiation

491. A person suffers from a chronic inflammatory process. In the focus of the inflammation, a certain biochemical process maintains the concentration of NADPH that is necessary for the phagocytosis mechanism to occur. What process is it?
a. Ornithine cycle
b. Glycolysis
c. Pentose phosphate pathway
d. Cori cycle
e. Uric acid synthesis

492. What is the name of the lower expanded hollow part of the pistil that contains ovules in a flower?

a. Style
b. Gynoecium
c. Receptacle
d. Ovary
e. Stigma

493. Uric acid is the end product of purine nucleotide breakdown. Elevated levels of uric acid in blood lead to the development of:
a. Glycogenosis
b. Diabetes mellitus
c. Gout
d. Gastritis
e. Hepatitis

494. The absorption zone of the primary anatomical root cortex mainly consists of multi-layered, live, loose parenchyma with starch granules. What tissue is described above?
a. Ectodermis
b. Mesodermis
c. Hypodermis
d. Endodermis
e. Periderm

495. A herbaceous plant of Malvaceae famiy has expectorant and coating properties. The plant has pale pink flowers gathered into apical panicles and schizocarpous fruit, which means it belongs to the following species:
a. Tussilago farfara
b. Plantago major
c. Plantago psyllium
d. Althaea officinalis
e. Thymus serpyllum

496. Oxidation of carbohydrates, amino acids, and fatty acids generally occurs via tricarboxylic acid cycle. Specify the acid with which acetyl-CoA reacts first in the tricarboxylic acid cycle:
a. Citric
b. Fumaric
c. Malic
d. Isocitric
e. Oxaloacetic

497. Optical activity of monosaccharides can be explained by their:
a. Asymmetric crystal
b. Asymmetric carbon atoms in a molecule
c. Number of hydroxyl groups in a molecule
d. Complicated rotation around sigma-bond
e. Aldehyde or ketone group

498. Neutralization of xenobiotics and active endogenous metabolites often occurs via inclusion of an oxygen atom into a substrate molecule as the result of the following process:
a. Transamination
b. Decarboxylation
c. Phosphorilation
d. Deaminization
e. Hydroxylation

499. Name the serums made from blood donated by volunteers or reconvalescent donors:
a. Autoimmune
b. Homologous
c. Attenuated
d. Heterologous

e. Corpuscular

500. A patient with a malignant tumor suffers from significant weight loss and exhaustion, caused by a certain substance that inhibits the hunger center and stimulates catabolism. Name this substance.
a. Aldosterone
b. Somatotropin
c. Insulin
d. Glucagon
e. Cachexin

501. A patient complains of maldigestion of nutrients and intestinal bloating. The doctor suspects acute pancreatitis and has ordered a diastase (alpha-amylase) activity test to confirm this diagnosis. Activity of this enzyme can be measured based on the breakdown of:
a. Cellulose
b. Starch
c. Albumin
d. Chitin
e. Collagen

502. Narcotic analgesics can induce constipations in a patient. What receptors are affected in such cases?
a. Opiate receptors
b. Mechanoreceptors
c. Chemoreceptors
d. Glutamate receptors
e. Dopamine receptors

503. A 54-year-old man has requested a pharmacist's advice on drug prescription. The patient has 4-year-long history of chronic glomerulonephritis and 2-year-long history of persistent hypertension. What substance synthesized in the kidneys has important role in development of arterial hypertension?
a. Catecholamines
b. Histamine
c. Aldosterone
d. Nitric oxide
e. Renin

504. Colloidal systems are widely used in medicine. In emulsions:
a. Dispersed medium - gas, continuous medium - solid
b. Dispersed medium - gas, continuous medium - liquid
c. Dispersed medium - liquid, continuous medium - solid
d. Dispersed medium - liquid, continuous medium - gas
e. Dispersed medium - liquid, continuous medium - liquid

505. A patient was admitted to a hospital in a state of hypoglycemic coma. It occurs at the following level of blood glucose:
a. 3,3 mmol/l
b. 4,5 mmol/l
c. 2,5 mmol/l or less
d. 4,0 mmol/l
e. 5,5 mmol/l

506. Emulsions containing less then 0,1% of dispersed phase (in volume) are classified as:
a. Water-in-oil type
b. High-concentration
c. Oil-in-water type
d. Concentrated
e. Diluted

507. A 40-year-old patient has developed polyuria (10-12 liters per day) and polydipsia induced by damage to the hypothalamo-hypophyseal tract. What hormone deficiency causes such disorders?
a. Oxytocin
b. Vasopressin
c. Somatotropin
d. Corticotropin
e. Thyrotropin

508. Any damage to the patient's vessels results in persistent hemorrhage. Blood clotting factor VIII is deficient in the patient's blood. What disease does this patient suffer from?
a. Radiation sickness
b. Acute vascular purpura
c. Anemia
d. Hemophilia
e. Thrombocytopenic purpura

509. Malignant tumors have a number of morphological and functional characteristics that differ them from benign ones. What is typical only of malignant tumors?
a. Only local influence
b. Expansive growth
c. Low degree of cell differentiation
d. No recurrences
e. No metastases

510. The antitumor agent 5-fluorouracil blocks the enzyme that attaches the methyl group to deoxyuridine monophosphate (dUMP). What reaction becomes inhibited, when this medicine is used?
a. Synthesis of thymidine monophosphate
b. Synthesis of glucose monophosphate
c. Synthesis of glycerol monophosphate
d. Synthesis of guanosine monophosphate
e. Synthesis of adenosine monophosphate

511. Choose the colloid surfactant out of the substances listed below:
a. Gelatin
b. Polyethylene
c. Iodine
d. Sodium chloride
e. Potassium oleate

512. Phenobarbital causes induction of smooth endoplasmic reticulum enzymes in the cells. As a result, the amount of active pharmaceutical ingredient decreases due to the following process:
a. Activation of protein peroxidation
b. Activation of microsomal oxidation
c. Activation of uric acid synthesis
d. Activation of glycolysis
e. Activation of lipid peroxidation

513. A patient with signs of cardiac glycosides intoxication was prescribed Unithiol. What is the mechanism of drug action in this case?
a. Increased Na^+ content in the myocardium
b. Reactivation of membrane K^+, Na^+ -adenosine triphosphatase
c. Induction of cardiac glycoside metabolism
d. Increased inflow of K^+ to cardiomyocytes
e. Binding of ionized Ca^2+

514. A perennial herbaceous plant has the following characteristic features: calyx with an epicalyx, double perianth, fused stamens with purple anthers, its fruit is a disc-like schizocarp. Name this plant.
a. Althaea officinalis
b. Hyoscyamus niger

c. Polygonum persicaria
d. Melissa officinalis
e. Amygdalus communis

515. Ammonia is a highly toxic substance, especially for the nervous system. This toxic product binds with a certain metabolite of the tricarboxylic acid cycle, forming glutamate and glutamine. What metabolite is it?
a. Citrate
b. Succinate
c. Alpha-ketoglutarate
d. Malate
e. Fumarate

516. A 35-year-old woman came to a doctor with complaints of headache, insomnia, loss of appetite, abdominal pain, a fever of 39--40^oC, and a rash that appeared on her abdomen. The woman was clinically diagnosed with typhoid fever. A sample of patient's blood serum was sent to a laboratory for serological testing with antibody detection. What serological test must be performed to confirm this diagnosis?
a. Wasserman complement fixation test
b. Ascoli precipitation test
c. Hemagglutination inhibition assay
d. Immunofluorescence assay
e. Widal agglutination test

517. What method of redox titration uses specific pH indicators for fixation of the titration endpoint?
a. Nitritometry
b. Bromatometry
c. Cerimetry
d. Iodometry
e. Permanganatometry

518. What plant is a component of the pectoral herbal tea and has characteristic basal long-petiolate, broadly ovate leaves that are white and downy from below and dark green, bare, and glossy from above?
a. Sambucus nigra
b. Verbascum phlomoides
c. Origanum vulgare
d. Thymus serpillum
e. Tussilago farfara

519. A 70-year-old man came to a doctor with complaints of enlarged hands, feet, tongue, and facial features. Examination reveals a significant increase of somatotropin levels in the patient's blood. What causes this condition in the patient?
a. Adenohypophyseal hypofunction
b. Hyperparathyroidism
c. Adenohypophyseal hyperfunction
d. Hypothyroidism
e. Hyperfunction of the adrenal cortex

520. To determine qualitative content of a drug, the drug sample was processed with 2M solution of HCl. White precipitate soluble in aqueous ammonia solution was formed. This analytical effect indicates the presence of the following cations:
a. Mercury(I)
b. Lead(II)
c. Silver(I)
d. Mercury(II)
e. Tin(II)

521. Examination of a sputum sample obtained from a patient provisionally diagnosed with

tuberculosis revealed thin, long, slightly curved, rod-shaped microorganisms in the specimen. The microorganisms were stained ruby-red and arranged in strands. What staining method was used in this case?

a. Loeffler
b. Ozheshko
c. Romanowsky-Giemsa
d. Gram
e. Ziehl-Neelsen

522. Under certain conditions, solutions of high-molecular substances can lose their flowability, meaning that the bonds begin to form between macromolecules, leading to the formation of a spatial grid. Name this process:

a. Coacervation
b. Peptization
c. Condensation
d. Coagulation
e. Gel formation

523. Phosphorylation reactions in the cell are catalyzed by enzymes that have the trivial name of "kinases". What class of enzymes do they belong to?

a. Lyases
b. Transferases
c. Oxidoreductases
d. Isomerases
e. Ligases

524. The children attending a kindergarten were hospitalized with diagnosis of poliomyelitis. What was the route of infection transmission in this case?

a. Transmission via airborne dust particles
b. Direct contact transmission
c. Fecal-oral transmission
d. Alimentary transmission
e. Vector-borne transmission

525. Bacterioscopy of smears stained according to the Romanowsky-Giemsa technique revealed violet cocci-like microorganisms in the cytoplasm of epithelial cells. What pathogen can be characterized by its intracellular location?

a. Salmonella
b. Streptococci
c. Staphylococci
d. Shigella
e. Chlamydia

526. What optical phenomenon is most intensive in suspensions?

a. Light absorption
b. Light transmission
c. Light reflection
d. Light refraction
e. Light scattering

527. A 50-year-old man with a history of alcoholic cirrhosis complains of dyspeptic disorders and bleeding from hemorrhoidal veins. Examination detects ascites and distended superficial veins of the anterior abdominal wall. What pathology is indicated by these signs?

a. Peptic ulcer disease
b. Portal hypertension
c. Enterocolitis
d. Hepatitis
e. Intestinal obstruction

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

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

529. Interferons have the properties of antiviral antibiotics and natural antitumor factors, which is why they are widely used in medical practice. Their protective effects are realized by influencing a certain stage of protein biosynthesis. Name this stage.

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

530. Corolla of a zygomorphic bisexual flower consists of 5 petals: the largest one is called a banner, two lateral - wings, and two fused together - keel. This corolla is characteristic of Fabacea family and is called:

a. Lingulate
b. Tubular
c. Rotate
d. Funnelform
e. Papilionaceous

531. A patient has mucosal dryness and mesopic vision disorder. What vitamin deficiency causes these symptons?

a. E
b. D
c. C
d. A
e. P

532. A 5-year-old child presents with abdominal distension, abdominal cramps, and diarrhea occurring 1-4 hours after drinking milk. Described symptoms are caused by the lack of enzymes that break up:

a. Lactose
b. Glucose
c. Maltose
d. Sucrose
e. Fructose

533. To stimulate birth activity, a certain neurohypophyseal hormone is used. Name this hormone:

a. Oxytocin
b. Thyroxine
c. Glucagon
d. Testosterone
e. Insulin

534. In order to bind hydrogen ions with tartaric acid during identification of potassium ions the following solution is used:

a. Sodium acetate
b. Hydrochloric acid
c. Sodium hydroxide
d. Sulfuric acid
e. Ammonia

535. A certain herbaceous plant grows on the meadows of the Carpathian Mountains. It has orange anthodium inflorescences, upright stem, and a rosette of basal leaves. Name this plant:

a. Calendula officinalis
b. Arnica montana
c. Centaurea cyanus
d. Cychorium intybus
e. Echinacea purpurea

536. What solution is used as a process solution (titrant) in alkalimetry?
a. Oxalic acid
b. Sodium tetraborate
c. Potassium hydroxide
d. Ammonium hydroxide
e. Hydrochloric acid

537. The patient with alcoholic cirrhosis complains of general weakness and dyspnea. The following is revealed: decrease of arterial pressure, ascites, dilation of stomach anterior wall superficial veins, esophageal varicose veins dilatation, splenomegaly. What haemodynamics disorder does the patient suffer from?
a. Portal hypertension
b. Collapse
c. Right ventricular failure
d. Cardiac insufficiency
e. Left ventricular failure

538. Name the substance that is the initial compound in the polymerization reaction:
a. Nucleophile
b. Polypeptide
c. Monomer
d. Polymer
e. Dimer

539. When food products are thermally processed, the spatial structure of the proteins changes. This process is called:
a. Hydration
b. Salting out
c. Dialysis
d. Denaturation
e. Renaturation

540. Examination of children with kwashiorkor revealed facial edema, ascites, weight loss, and stunted growth. What is the most likely cause of this disease?
a. Carbohydrate deficiency
b. Excess fats and carbohydrates
c. Alimentary protein deficiency
d. Deficiency of unsaturated fatty acids
e. Excess protein in the diet

541. Transformation C_2H_4 (alkene) longrightarrow C_2H_6 (alkane) occurs during the following reaction:
a. Hydration
b. Dehydration
c. Hydrogenation
d. Dehydrogenation
e. Dimerization

542. A patient has been hospitalized with signs of ascites. The doctor prescribed the patient spironolactone to enhance the diuretic effect of hydrochlorothiazide. What effect does this drug have apart from the diuretic effect?
a. Irritant
b. Analgesic

c. Antispasmodic
d. Sedative
e. Potassium-sparing

543. Biopotentials caused by various physiological processes are the result of the following forming at the phase interface:
a. Diffuse layer
b. Adhesive layer
c. Electrical double layer
d. Absorption layer
e. -

544. Potentiometry is one of the electrochemical methods of analysis. This method is based on measuring (determination) of:
a. Zeta-potential
b. Diffuse layer potential
c. Indicator electrode potential
d. Systemic redox potential
e. Reference electrode potential

545. Which of the following compounds is a complex ether (an ester)?
a. CH_3-O-C_2H_5
b. C_15H_31COOH
c. CH_3-O-CH_3
d. C_2H_5OH
e. CH_3COOCH_3

546. A starch molecule contains residues of a certain monosaccharide. Name this monosaccharide.
a. D-ribose
b. D-glucose
c. D-fructose
d. D-mannose
e. D-galactose

547. What indicator is used in the Fajans-Khodakov method to determine sodium iodide (NaI)?
a. Potassium chromate
b. Diphenylcarbazone
c. Eosin
d. Methyl orange
e. Ammonium iron(III) sulfate

548. Pleural tap performed by a doctor has yielded a significant amount of yellow exudate. Microscopy detected neutrophils in the exudate. What type of exudate is it characteristic of?
a. Purulent
b. Bloody
c. Fibrinous
d. Serous
e. Hemorrhagic

549. What process occurs as a result of electrolytes effect on a solution of a high-molecular compound?
a. Thixotropy
b. Salting out
c. Coacervation
d. Syneresis
e. Solvation

550. Decarboxylation of histidine amino acid leads to formation of histamine in the cells. What enzyme ensures neutralization of this biogenic amine?

a. Catalase
b. Monoamine oxidase (MAO)
c. Aminotransferase
d. Aminopeptidase
e. Diamine oxidase (DAO)

551. After a subtotal gastric resection, the patient developed B_12-deficiency anemia. What cells in a blood smear are typical in this pathology?
a. Normoblasts
b. Microcytes
c. Erythroblasts
d. Anulocytes
e. Megaloblasts

552. What specific reagent is used in the qualitative analysis for Fe^2+ cations?
a. NH_4OH
b. K_4[Fe(CN)_6]
c. K_3[Fe(CN)_6]
d. NaOH
e. K_2Na[Co(NO_2)_6]

553. Stone cells shaped like dumbbells or tubular bones were detected in begonia leaves. What type of cells do they belong to?
a. Trichosclereids
b. Osteosclereids
c. Fibrosclereids
d. Macrosclereids
e. Astrosclereids

554. As a result of prolonged starvation, intracellular lipolysis activates in the tissues. What hormone is the activator of this process?
a. Glucagon
b. Insulin
c. Calcitonin
d. Oxytocin
e. Cholecalciferol

555. By means of photoelectrocolorimetric analysis the concentration of the following can be determined:
a. Colorless solution
b. Colored solution
c. Turbid solution
d. Any type of solution
e. Optically active substance

556. Megaloblasts and a high color index were detected in the child's blood. The child was diagnosed with megaloblastic anemia. What drug must be prescribed in this case?
a. Nicotinic acid
b. Ascorbic acid
c. Iron lactate
d. Cyanocobalamin
e. Coamidum

557. Examination of the patient's oral cavity detects the signs of aphthous stomatitis. Microscopy of the smears prepared from the contents of the aphthous ulcers shows gram-positive round and oval cells that vary in size and exhibit signs of budding pattern of cell division. What microorganisms are the likely cause of this pathology?
a. Pneumococci
b. Streptococci

c. Candida fungi
d. Staphylococci
e. Meningococci

558. A patient complains of low body temperature, weight gain, inertness, and drowsiness. T4 and T3 levels are decreased in his blood plasma. These signs are characteristic of the following pathology:
a. Myxedema
b. Phenylketonuria
c. Pellagra
d. Diabetes mellitus
e. Albinism

559. Allopurinol is used to reduce the formation of uric acid in the treatment of gout. What enzyme does this compound inhibit?
a. Xanthine oxidase
b. Amylase
c. Arginase
d. Catalase
e. Lactate dehydrogenase

560. When measuring the antimicrobial activity of drugs, their minimum concentration that suppresses the growth of microbes must be determined. What is this parameter?
a. The lowest drug concentration that has a bactericidal effect
b. The lowest drug concentration that inhibits growth of a bacterial test culture
c. -
d. The lowest drug concentration that causes development of selective strains of test cultures
e. The lowest drug concentration that inhibits enzyme biosynthesis in the macroorganism

561. A patient developed anaphylactic shock after administration of lidocaine. What antibodies cause the development of this allergic reaction?
a. IgE
b. IgM
c. IgG
d. IgD
e. IgA

562. Autopsy of a lab rat that for the period of 24 hours remained in an immobilization chamber revealed gastric erosions. What hormones can cause erosions in this case?
a. Glucagon
b. Mineralocorticoids
c. Insulin
d. Estrogens
e. Glucocorticoids

563. What is the name of the lower expanded hollow part of the pistil of a flower, where ovules are located?
a. Gynoecium
b. Receptacle
c. Stigma
d. Ovary
e. Stylus

564. What thermodynamic parameter does not allow measuring its absolute value?
a. Internal energy
b. Heat capacity
c. Work
d. Heat
e. Thermal effect

565. A man was brought into the admission room with complaints of problematic breathing, salivation, spastic abdominal pain, diarrhea, dizziness, and deteriorating visual acuity. He was diagnosed with a poisoning caused by organophosphorus compounds. What medicines should be included into the pathogenetic therapy in this case?

a. Nalorphine hydrochloride and bemegride
b. Atropine sulfate and dipyroxime (trimedoxime bromide)
c. Tetacin-calcium (sodium calcium edetate) and unithiol (dimercaptopropansulfonate)
d. Glucose and bemegride
e. Sodium thiosulfate and bemegride

566. What solution can be determined by the photocolorimetric method measuring self-absorbance?

a. Potassium chloride
b. Potassium chromate
c. Potassium sulphate
d. Potassium phosphate
e. Potassium nitrate

567. Due to spleen rupture a woman has developed internal hemorrhage with signs of severe hypoxia. What anatomical structure is the most susceptible to hypoxia?

a. Muscles
b. Cerebral cortex
c. Kidneys
d. Stomach
e. Lungs

568. In human body, thyroxine is an important thyroid hormone. What microelement is necessary to synthesize this hormone?

a. Copper
b. Iron
c. Potassium
d. Iodine
e. Calcium

569. Microscopy of a rhizome revealed periphloematic vascular bundles. What plant does it belong to?

a. Dryopteris filix-mas
b. Acorus calamus
c. Potentilla erecta
d. Elymus repens
e. Convallaria majalis

570. Production of injection solutions in pharmacies requires srtict control of sterilization quality. What is placed in autoclave sterilization box to ensure proper control?

a. Ampoule with microbe spores
b. Ampoule with colibacillus culture
c. Ampoule with fungi spores
d. Ampoule with staphylococcus culture
e. Ampoule with viruses

571. Name the primary drug of choice for treatment of narcotic analgesics overdose.

a. Naloxone
b. Diazepam
c. Unithiol (Dimercaprol)
d. Caffeine and sodium benzoate
e. Calcium chloride

572. Bacterioscopy of the smears prepared from urethral discharge detects there gram-positive intracellular diplococci. What microorganisms were detected in the material?

a. Meningococci
b. Gonococci

c. Peptostreptococci
d. Staphylococci
e. Streptococci

573. What types of fruits are characteristic of the Ericaceae family plants?
a. Legume, single follicle, single nutlet
b. Capsule, drupe, berry
c. Cynarrhodium, compound drupe, fraga
d. Hesperidium, silique, double-winged samara
e. Achene, nutlet, drupe

574. When an isolated system spontaneously approaches its equilibrium, its entropy:
a. Approaches zero
b. Approaches infinity
c. Reaches maximum
d. Reaches minimum
e. Demonstrates linear magnification

575. With which of the following compounds does propane react under the given conditions?
a. Br_2, in the light, 20^oC
b. Br_2, in the dark, 20^oC
c. Diluted H_2SO_4, 20^oC
d. SO_2 + Cl_2, in the dark
e. AlCl_3

576. On examination the patient's sclera and oral mucosa are icteric. What biochemical blood value can be expected to be increased?
a. Cholesterol
b. Albumin
c. Glucose
d. Bilirubin
e. Amylase

577. A patient suffers from block of cytochrome oxidase enzyme caused by cyanide poisoning. What type of hypoxia is developed in this case?
a. Tissue
b. Respiratory
c. Hemic
d. Stagnant
e. Circulatory

578. What device is used to measure surface tension of a liquid?
a. Viscometer
b. Areometer
c. Stalagmometer
d. Nephelometer
e. Calorimeter

579. The enzymes of medicinal substance metabolism that require monooxygenase reactions of biotransformation are localized in the cells mainly in the:
a. Cytosol
b. Mitochondria
c. Nucleus
d. Lysosomes
e. Microsomes of the endoplasmic reticulum

580. Amino acids can participate in a large number of metabolic processes. What amino acid functions as a donor of methyl groups (-CH_3)?
a. Tryptophan

b. Leucine
c. Valine
d. Isoleucine
e. Methionine

581. A pharmaceutical manufacture produces a drug, that is an animal antibiotic. Point out this drug among those listed below:
a. Novobiocin
b. Lysozyme
c. Chloramphenicol
d. Phaseolin
e. Gramicidin

582. A 33-year-old woman was admitted into a psychiatric hospital with an anxiety disorder of neurotic origin. What drug is indicated in this case?
a. Diazepam
b. Droperidol
c. Levodopa
d. Naloxone
e. Valerian extract

583. A colloidal system can be purified using filtration under excess pressure through a semipermeable membrane. Name this purification method.
a. Ultrafiltration
b. Dialysis
c. Electrodialysis
d. Filtration
e. Diffusion

584. What forms when gelatin dissolves in water at an elevated temperature?
a. Emulsion
b. Brittle xerogel
c. Elastic xerogel
d. Molecular solution
e. Suspension

585. A 23-year-old patient has laryngeal diphtheria that manifests as classic clinical signs with the development of true croup. What type of inflammation is characteristic of this disease?
a. Putrid
b. Purulent
c. Croupous
d. Serous
e. Fibrinous

586. Velamen is a specific multilayer absorbent tissue that often is photosynthetic. It provides protection against mechanical damage and water loss. It is formed on the roots of the following type of plants:
a. Hygrophytes
b. Mesophytes
c. Hydrophytes
d. Xerophytes
e. Epiphytes

587. To determine the species of disease agent it is necessary to study its destructive enzymes. What enzyme of those listed below is one of them?
a. Hyaluronidase
b. Catalase
c. Peroxidase
d. Hydrolase

e. Isomerase

588. What reagent will allow for unsaturated organic compounds reduction under the conditions given below?

a. H_2, Ni, t

b. H_2O, Hg^2+, H^+

c. K_2Cr_2O_7, H^+

d. NaOH, H_2O

e. HNO_3, p, t

589. A characteristic reaction between sodium sulfide and the salts of an unknown cation has produced a white precipitate. What cation was it?

a. Magnesium

b. Lead

c. Mercury

d. Copper

e. Zinc

590. In course of long-term treatment of an infectious patient with penicillin, the pathogen transformed into the L-form. What changes occur in the pathogen cell in case of L-transformation?

a. Absence of inclusions

b. Absence of a cell wall

c. Absence of flagella

d. Absence of a spore

e. Absence of a capsule

591. Which compound has the most markedly expressed basic properties?

a. CH_3CH_2OH

b. CH_3CH_2NH_2

c. CH_3CH_2SH

d. CHequiv CH

e. CH_3COOH

592. What local anesthetic is given to patients with cardiac rhythm disorder?

a. Lidocaine

b. Morphine hydrochloride

c. Caffeine and sodium benzoate

d. Paracetamol

e. Nitrazepam

593. Proteins are of great importance for vital functions. What value of pH results in zero electrophoretic mobility of gelatin (gelatin isoelectric point equals 4.7)?

a. 9.4

b. 7.0

c. 14.0

d. 4.7

e. 5.5

594. A patient came to the pharmacy to obtain an antidiarrheal agent. What drug would be recommended by the dispensing chemist?

a. Ranitidine

b. Dicaine (Tetracaine)

c. Anesthesin (Benzocaine)

d. Picolax (Sodium picosulfate)

e. Loperamide

595. A certain reaction is successfully used for rapid diagnostics of many bacterial, viral, protozoal, and fungal diseases, as well as for detection of pathogens in the environment, food, and water. This reaction is based on the principle of repeated copying of a specific DNA segment or a single gene,

using the DNA polymerase enzyme. Name this reaction:

a. Polymerase chain reaction
b. Enzyme-linked immunosorbent assay
c. Radioimmunoassay
d. Enzyme-marked antibody reaction
e. Immunofluorescence reaction

596. The surface activity of diphilic molecules can be described using the Traube-Duclos rule. How will the surface activity of fatty acids change in the area of low concentrations, if the length of the hydrocarbon radical increases by three –CH_2- groups?

a. It will become 27 times lower
b. It will remain unchanged
c. It will become 9 times higher
d. It will become 3 times lower
e. It will become 27 times higher

597. What method of titrimetric analysis requires the use of both external and internal indicators?

a. Complexometric titration
b. Alkalimetry
c. Permanganatometry
d. Argentometry
e. Nitrite titration

598. HIV-infection occupational risk groups include people of various professions, healthcare workers included. Specify the mosl likely route of infection transmission for healthcare workers:

a. Transmission via airborne dust particles
b. Fecal-oral transmission
c. Vector-borne transmission
d. Parenteral transmission
e. Droplet transmission

599. Under what condition is the solubilization process possible?

a. Surfactant is in the form of micelles
b. Surfactant is in the form of molecules
c. Surfactant concentration in the solution is arbitrary
d. Solute has high solubility in a certain solvent
e. Surfactant was comminuted before the dissolution

600. A patient has marked allergic symptoms: rashes on the body, facial edema, itching. This condition is associated with an increase in formation of a certain biogenic amine. Name this biogenic amine.

a. Indican
b. Histamine
c. Putrescine
d. Cadaverine
e. GABA

601. A group of tourists set off for a hiking tour into the mountains. Two hours after the departure, some of them developed tachycardia and shortness of breath, which indicates hypoxia. What type of hypoxia is the cause of these disorders?

a. Hypoxic hypoxia
b. Respiratory hypoxia
c. Hemic hypoxia
d. Circulatory hypoxia
e. Tissue hypoxia

602. A patient with food poisoning, accompanied by diarrhea and multiple episodes of vomiting, developed dehydration. What type of total blood volume disorder can be observed in this case?

a. Polycythemic hypovolemia

b. Polycythemic hypervolemia
c. Oligocythemic hypovolemia
d. Oligocytemic hypervolemia
e. Normocythemic hypovolemia

603. Against the background of cardiac glycoside treatment, a person developed an arrhythmia. The doctor prescribed the patient a potassium medicine that successfully normalized the heart rate. Name this potassium medicine.
a. Metoprolol
b. Asparcam
c. Novocainamide
d. Amiodarone
e. Verapamil

604. What substance can enter into substitution and addition reactions?
a. Ethanol
b. Ethane
c. Ethylene
d. Acetylene
e. Polypeptide

605. When determining oxidizing agents by means of iodometry in the presence of starch the following phenomenon can be observed at the titration endpoint:
a. Red coloring appears
b. Blue coloring disappears
c. Green coloring of precipitate appears
d. White precipitate forms
e. Green coloring of solution disappears

606. At an altitude of 20000 meters, a depressurization of a cargo plane occurred, followed by its crashing to the ground. A forensic examination determined that the people onboard had died before the impact with the ground. Embolism was stated as one of the causes of death of the entire crew. What type of embolism is most likely in this case?
a. Fat embolism
b. Thromboembolism
c. Air embolism
d. Gas embolism
e. Foreign body embolism

607. Number of freedom degrees at the point of intersection of liquidus with Y-axis on the fusibility chart of a two-component system would equal:
a. 0
b. 1
c. 4
d. 3
e. 2

608. A 52-year-old man complains of sour eructation, heartburn, nausea, epigastric pain, and constipations. What gastric secretion disorder is likely in the patient?
a. Hypochlorhydria
b. Achlorhydria
c. Hyposecretion
d. Achylia
e. Hypersecretion and hyperchlorhydria

609. Cases of tonsillitis periodically occur in the children that attend a kindergarten. During preventive examination, a medical laboratory scientist obtained pharyngeal swabs from ten children and stained the obtained material using the Neisser technique. Microscopy detects thin yellow rod-shaped microorganisms with dark brown thickenings at their ends, arranged in the shape of

Roman numerals X and V. What infectious disease can be caused by the detected causative agents?
a. Pneumonia
b. Tuberculosis
c. Infectious mononucleosis
d. Diphtheria
e. Scarlet fever

610. Solutions of some electrolytes are used as medicines. What is the maximum value of the isotonic coefficient for MgSO_4 solution?
a. 3
b. 5
c. 2
d. 7
e. 4

611. What disaccharide is a reducing one?
a. Ribose
b. Sucrose
c. Starch
d. Cellulose
e. Maltose

612. During a morphological description of Salvia sclarea, students noticed its bright bracts. They serve to attract pollinating insects and are a modification of a:
a. Androecium
b. Shoot
c. Pedicel
d. Leaf
e. Receptacle

613. Electrolytic dissociation is one of the quantitative characteristics of electrolytes. What is used to determine the degree of electrolytic dissociation?
a. The product of the number of dissociated and non-dissociated solute molecules
b. The ratio of the solution concentration to the total number of dissociated solute molecules
c. The ratio of the number of dissociated molecules to the total number of solute molecules
d. The ratio of the number of non-dissociated molecules to the number of dissociated solute molecules
e. The ratio of the number of non-dissociated solute molecules to the total number of ions

614. According to Hueckel's rule an organic compound will have aromatic properties if:
a. There is only one substituent in the molecule
b. There is a cyclohexane ring in the molecule
c. Its molecules are composed exclusively of carbon and hydrogen atoms that form a linear carbon chain
d. There are condensed nuclei in the molecule
e. Its molecular structure contains a planar cycle with a closed conjugated system that contains (4n+2) of pi electrons, where n = 0,1,2,3, etc.

615. On the 2nd day after developing acute inflammation of the knee joint, the patient exhibits the joint enlargement, swelling of the skin. At what stage of inflammation are these signs typically observed?
a. Regeneration
b. Proliferation
c. Exudation
d. Sclerosis
e. Alteration

616. A certain meristematic tissue is located in the vascular bundles of the stem between the secondary phloem and the secondary xylem. What type of meristematic tissue is it?

a. Pericycle
b. Cambium
c. Phellogen
d. Procambium
e. Dermatogen

617. Single-use syringes produced at a medical equipment factory need to be sterilized. What sterilization method would be the most advisable for this type of medical equipment?
a. Dry heat
b. Tyndallization
c. Radiation sterilization (gamma-radiation)
d. Autoclaving
e. Pasteurization

618. What is the main mechanism of benzylpenicillin bactericidal action on the coccal flora?
a. Activation of macroorganism immune system
b. Disturbed synthesis of microbial cell wall
c. Inhibition of protein synthesis
d. Increased phagocytic activity of leukocytes
e. Disturbed cytoplasmic membrane permeability

619. What working solutions (titrants) are used in the method of precipitation titration - Volhard method?
a. KMnO_4 and KBrO_3
b. HClO_4 and KOH
c. Na_2S_2O_3 and K(I_3)
d. H_2SO_4 and NaOH
e. AgNO_3 and NH_4SCN

620. A patient developed candidiasis caused by long-term antibiotic treatment. What drug should be used in this case to eliminate candidiasis?
a. Interferon
b. Sulfadimezin (Sulfadimidine)
c. Nystatin
d. Fumagillin
e. Rubomycin (Daunorubicin)

621. A patient with primary hypertension is prescribed captopril. What is this drug's mechanism of action?
a. beta-adrenergic block
b. Inhibition of angiotensin converting enzyme activity
c. Angiotensin II receptors block
d. alpha-adrenergic block
e. Block of slow calcium channels

622. Coulometry is based on measuring the amount of electricity needed for an electrode reaction. What law is the basis for coulometric determination of substances?
a. Stokes law
b. Faraday law
c. Coulomb law
d. Beer-Bouguer-Lambert law
e. Newton law

623. Oxytocin was prescribed for a pregnant woman with weak labor activity, who was hospitalized into the maternity ward. What pharmacological group does this drug belong to?
a. Anabolic steroids
b. Glucocorticoids
c. Thyroid hormone preparations
d. Mineralocorticoids

e. Pituitary hormone preparations

624. What nonsteroidal anti-inflammatory drug selectively inhibits COX-2 and has no ulcerogenic effect?

a. Celecoxib
b. Ibuprofen
c. Acetylsalicylic acid
d. Paracetamol
e. Diclofenac sodium

625. At the beginning of the bacteriological study, microscopy of the studied material was carried out and Gram-positive cocci were detected in it. The cocci were arranged in the clusters that resembled a bunch of grapes. Next, the material was inoculated on a dense nutrient medium. Why was it done?

a. To study the antigenic properties
b. To study the biochemical properties
c. To obtain the pure culture
d. To study the cultural properties
e. To obtain isolated colonies

626. A man with allergic dermatitis and disturbed sleep came to a doctor. What antihistamine would be optimal in this case?

a. Dimedrol (Diphenhydramine)
b. Dexamethasone
c. Enterosgel (Polymethylsiloxane polyhydrate)
d. Ampicillin
e. Loratadine

627. To identify iodide ions in a solution, a reaction with lead cations was conducted. The obtained precipitate was dissolved in water by means of heating; afterwards the test glass was cooled. What analytical effect could be observed in the process?

a. Gas bubbles
b. Golden scales
c. Blue precipitate
d. White precipitate
e. Brown precipitate

628. Name the phenomenon when one drug weakens the effect of another drug:

a. Potentiation
b. Tachyphylaxis
c. Tolerance
d. Antagonism
e. Sensitization

629. After an 8-year-old boy had eaten some strawberries he developed red itching spots on his skin, urticaria. What bioactive substance causes the itching sensation in this case?

a. Tissue hyaluronidase
b. Complement component C3a
c. Cathepsin
d. Prostaglandin E2
e. Histamine

630. Some leaf cells have lignified membranes. These cells are called:

a. Trichomes
b. Collenchyma
c. Sieve tubes
d. Sclereids
e. Companion cells

631. A 2M solution of HCl was added into the studied solution, resulting in formation of a white

precipitate that dissolved when heated. What cations are present in the solution?
a. Hg^22+
b. Mg^2+
c. Ba^2+
d. Ag^+
e. Pb^2+

632. During long-term carbon tetrachloride poisoning of animals significant activity drop of aminoacyl tRNA synthetase in hepatocytes was detected. What metabolic process is disrupted in this case?
a. Post-translational modification of peptides
b. Post-transcriptional modification of RNA
c. DNA replication
d. Protein biosynthesis
e. RNA transcription

633. Liquid dosage forms that contain camphor and chloral hydrate are used in dental practice. What phases are in the state of equilibrium at the eutectic point of the melting point diagram of the camphor-chloral hydrate mixture?
a. Eutectic melt, camphor crystals, chloral hydrate crystals
b. Eutectic melt
c. Eutectic melt, camphor crystals
d. Camphor crystals, chloral hydrate crystals
e. Eutectic melt, chloral hydrate crystals

634. Name the titrimetric method for quantitative determination of phenol and its derivatives:
a. Bromatometry
b. Nitritometry
c. Permanganatometry
d. Ascorbinometry
e. Cerimetry

635. Primary and secondary nitroalkanes are tautomeric compounds. What tautomerism is characteristic of these compounds?
a. Amino-imino tautomerism
b. Aci-nitro tautomerism
c. Keto-enol tautomerism
d. Tautomerism of azoles
e. Lactam-lactim tautomerism

636. What antifungal antibiotic is poorly absorbed in the gastrointestinal tract and is effective against intestinal candidiasis?
a. Nystatin
b. Griseofulvin
c. Fluconazole
d. Terbinafine
e. Ketoconazole

637. During furosemide therapy of a patient with chronic edematous syndrome, his plasma-cation concentration was disturbed. What drug should be used in this case?
a. Potassium chloride
b. Ascorutin (Ascorbic acid + Rutoside)
c. Thiamine bromide
d. Magne B_6
e. Aspirin

638. Metallochromic indicators are used in complexometric titration, when determining total water hardness. For this purpose, the following can be used as an indicator:
a. Potassium chromate
b. Phenolphthalein

c. Fluorescein
d. Methyl red
e. Eriochrome black T

639. All strong electrolytes cause sol coagulation, if added to a sol in a sufficient amount. The coagulant ion in this case is a particle with the charge that is:
a. Identical to potential-determining ions
b. Identical to the charge of the colloidal particle
c. Opposite to the counterions of the adsorption layer
d. Opposite to the charge of the colloidal particle
e. Identical to the charge of the nucleus

640. Name the pharmacopoeial method for determining the relative molecular mass of high-molecular compounds:
a. Osmometry
b. Calorimetry
c. Cryoscopy
d. Viscosimetry
e. Ebullioscopy

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

642. A patient with acute cardiac failure was prescribed an adrenoceptor agonist. Name this drug:
a. Digoxin
b. Dobutamine
c. Metoprolol
d. Salbutamol
e. Corglycon (Convallariae glycoside)

643. A pharmacy has received a batch of drugs for treatment of upper respiratory tract infection. What drug is used to treat influenza?
a. Methisazone
b. Rimantadine
c. Levamisole
d. Doxycycline
e. Idoxuridine

644. A fruit consists of overgrown conic red pulpy hypanthium and proper carpels - small nuciform achenes recessed in the fruit pulp. This type of fruit belongs to:
a. Aronia melanocarpa
b. Rosa canina
c. Pyrus communis
d. Fragaria vesca
e. Rubus idaeus

645. What drug can be classified as an angiotensin-converting enzyme blocker based on its mechanism of action?
a. Benzohexonium
b. Verapamil
c. Lisinopril
d. Furosemide
e. Valsartan

646. Select the hepatoprotective drugs from the list below:

a. Essentiale (Phospholipides), Thiotriasoline

b. Allochol, Cholenzym

c. No-Spa (drotaverine), papaverine hydrochloride

d. Oxaphenamide (Osalmid), Nicodin

e. Festal, Panzinorm (Pancreatin)

647. 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. Replication initiation

c. Translation initiation

d. Translation termination

e. Transcription initiation

648. What has an effect on the coagulating action of a coagulant ion, according to the Schulze-Hardy rule?

a. Ion charge

b. Ion size

c. Adsorbability

d. Hydration ability

e. Polarization

649. Sanitary microbiological investigation of potable water has detected coliphages. What conclusion can be made about the sanitary-hygienic status of this water?

a. The water is safe to drink after boiling

b. The water is safe to drink

c. The water is for industrial use only

d. Artesian water

e. Fecal contamination

650. Hemoglobin catabolism results in release of iron that is transported to the bone marrow by a certain transfer protein and used again for the synthesis of hemoglobin. Specify this transfer protein:

a. Albumin

b. Transferrin (siderophilin)

c. Transcobalamin

d. Ceruloplasmin

e. Haptoglobin

651. A doctor prescribed nitrazepam to a patient complaining of insomnia. This drug has a hypnotic effect, because it interacts with certain receptors. Name these receptors.

a. Benzodiazepine receptors

b. Cholinergic receptors

c. Adrenoceptors

d. Histamine receptors

e. Serotonin receptors

652. A patient with essential hypertension is prescribed captopril. What is the mechanism of action of this drug?

a. Angiotensin II receptor block

b. Inhibition of angiotensin-converting enzyme activity

c. Slow calcium channel block

d. beta-adrenoceptor block

e. alpha-adrenoceptor block

653. A narcological department has received a man diagnosed with morphinism. The doctor notes decreased pharmacological activity of morphine. Name the phenomenon, when drug effectiveness is decreased after its repeated administration:

a. Material cumulation

b. Tolerance
c. Antagonism
d. Summation
e. Functional cumulation

654. A patient with type II diabetes mellitus was prescribed a synthetic drug that is a sulfonylurea derivative. Name this drug:
a. Glibenclamide
b. Furosemide
c. Prednisolone
d. Anaprilin (Propranolol)
e. Insulin

655. A solution contains iodide and chloride ions. Choose the reagent to detect iodide ions:
a. Limewater
b. Gypsum water
c. Barium water
d. Chlorine water
e. Hydrogen sulfide water

656. A patient presents with intestinal obstruction and a decrease in the bactericidal effect of gastric juice, which contributes to the growth of putrefactive microflora. In this case, increased excretion of a certain substance can be observed in urine. Name this substance.
a. Lactic acid
b. Protein
c. Glucose
d. Indican
e. Creatine

657. In the process of systematic analysis of a cation mixture, iron(III) cations can be determined using the fractional method. What reagent is used for this purpose?
a. Sodium dihydrogen phosphate
b. Potassium hexacyanoferrate(II)
c. Nitric acid
d. Hydrochloric acid
e. Potassium chloride

658. To treat glaucoma a doctor made a decision to prescribe a cholinomimetic agent of direct action. Name this drug:
a. Sulfacyl-sodium (Sulfacetamide)
b. Zinc sulfate
c. Atropine sulfate
d. Platyphylline hydrotartrate
e. Pilocarpine hydrochloride

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

660. A 71-year-old woman with cholecystitis has developed mechanical jaundice. What type of arrhythmia will develop in this case?
a. Ciliary arrhythmia
b. Sinus tachycardia
c. Extrasystole
d. Sinus bradycardia
e. Atrioventricular block

661. In pine wood, essential oils accumulate in the passages that inside are lined with a layer of secretory cells. Name these structures:

a. Articulated laticifers

b. Schizogenous cavities

c. Lysigenous cavities

d. Non-articulated laticifers

e. Glandules

662. What indicators are used to determine the titration endpoint in the acid-base titration method?

a. Metal indicators

b. Luminescent indicators

c. pH indicators

d. Redox indicators

e. Adsorption indicators

663. In the course of bronchitis pharmacotherapy a patient has developed dyspeptic disorders, photodermatitis and hepatic failure. What drug can cause such disorders?

a. Codeine phosphate

b. Acetylcysteine

c. Ascorbic acid

d. Paracetamol

e. Doxycycline

664. In potentiometric titration the following indicator electrode is used for chloride and borate acids quantitative determination in their mixture:

a. Silver-chlorine

b. Calomel

c. Platinum

d. Silver

e. Glass

665. In the postoperative period, the patient was receiving an antibiotic. Over time, the patient started complaining of impaired hearing and vestibular disorders. What group of antibiotics has such side effects?

a. Aminoglycosides

b. Macrolides

c. Cephalosporins

d. Penicillins

e. Tetracyclines

666. Potentiometry is an analytical method widely used in pharmaceutical analysis. In what galvanic cell its electromotive force (EMF) does not depend on the value of standard electrode potentials?

a. Galvanic cell without ionic transport

b. Reversible galvanic cell

c. Concentration galvanic cell

d. Chemical galvanic cell

e. Galvanic cell with ionic transport

667. What substance forms colloid solution when dissolved in water?

a. Collargol

b. Silver nitrate

c. Sucrose

d. Sodium sulfate

e. Potassium gluconate

668. If in the process of molecular adsorption the solute is being adsorbed more than the solvent, then the following occurs:

a. Negative adsorption

b. Ion adsorption

c. No adsorption
d. Selective adsorption
e. Positive adsorption

669. Androecium of Brassica oleracea flower has six stamens, with four stamens of inner circle longer than two stamens of outer circle. What is this type of androecium called?
a. Polydelphous
b. Didynamous
c. Diadelphous
d. Monadelphous
e. Tetradynamous

670. In recent decades, the etiological role of viruses in the occurrence of cervical cancer has been proven. Name these viruses.
a. Herpes simplex virus type 2
b. Human papillomaviruses
c. Adenoviruses
d. Cytomegalovirus
e. HTLV-1 and HTLV-2

671. What ion increases osmotic pressure in the focus of inflammation?
a. Calcium
b. Chlorine
c. Potassium
d. Magnesium
e. Fluorine

672. In the drug manufacture it is necessary to follow a complex of measures aimed at prevention of their microbial contamination. What is the name of this complex of measures?
a. Disinfection
b. Asepsis
c. Deratisation
d. Sterilization
e. Antisepsis

673. A woman came to a pediatrician complaining of deteriorating condition of her child. The disorder manifests in enlarged fontanelle, a delay in tooth eruption, and bone deformation. What medicine must be prescribed first in this case?
a. Proserin (Neostigmine)
b. Cyanocobalamin
c. Allopurinol
d. Cholecalciferol
e. Thiamine bromide

674. Gravimetric titration was used to determine aluminium mass fraction in a medicinal preparation. Ammonium hydroxide solution was used as a precipitant. In this case the gravimetric form will be:
a. Aluminium hydroxide
b. Aluminium carbonate
c. Aluminium oxide
d. Ammonium nitrate
e. Ammonium chloride

675. Which alkadiene of those listed below is a diene with cumulated double bonds?
a. $CH_2 = C = CH_2$
b. $CH_3 - CH = CH - CH_2 - CH = CH_2$
c. $CH_2 = CH - CH = CH_2$
d. $CH_2 = CH - CH_2 - CH_2 - CH = CH_2$
e. $CH_2 = CH - CH_2 - CH = CH_2$

676. Dissociation degree in 0.01 M water solution is the same for all the strong electrolytes listed below. Name the substance with the highest boiling temperature:

a. Na_3PO_4

b. Al_2(SO_4)_3

c. KCl

d. Cu(NO_3)_2

e. K_3PO_4

677. Laboratories of various specialization use the following method to determine general water hardness of potable water:

a. Alkalimetry

b. Complexometric titration

c. Oxidimetry

d. Precipitation

e. Acidimetry

678. A woman underwent a gastroduodeno-scopy that revealed decreased functioning of the gastroesophageal junction with reflux of gastric contents into the esophagus. What sign is the main indicator of this disorder?

a. Nausea

b. Problematic swallowing

c. Diarrhea

d. Palpitations

e. Heartburn

679. In pharmacy, extraction is used to extract bioactive substances from herbal raw materials. What law underlies this process?

a. Law of mass action

b. Ostwald's law

c. Poiseulle's law

d. Distribution law

e. Konovalov's law

680. On the teeth of a leaf blade, water droplets are excreted through a constantly open gap between two guard cells of the epidermis. This structure is a:

a. Glandular hair

b. Sticky hair

c. Osmophor

d. Hydathode

e. Nectary

681. A solution of an alkali was added into the analyte solution and the resulting solution was heated. In the process, a black precipitate formed and a pungent-smelling gas was released. It indicates the presence of the following in the solution:

a. Ammonium and mercury(I) ions

b. Ammonium and stanium(II) ions

c. Ammonium and lead(II) ions

d. Ammonium and calcium ions

e. Ammonium and mercury(II) ions

682. A patient undergoes chemotherapy with 5-fluorouracil that is a competitive inhibitor of thymidilate synthase. What process is inhibited by this drug?

a. Purine nucleotides disintegration

b. Glucose synthesis

c. Thymidine monophosphate synthesis

d. Purine nucleotides salvage

e. Adenosine triphosphate synthesis

683. What is the generative reproductive organ of gymnosperms and angiosperms?

a. Flower
b. Strobilus
c. Fruit
d. Macro- and microspores
e. Seed

684. What substance is a mediator of delayed-type hypersensitivity?
a. Serotonin
b. Prostaglandins
c. Histamine
d. Bradykinin
e. Lymphokines

685. After administration of a drug, the patient presents with itching, skin rash, difficulty breathing, blood pressure of 70/40 mm Hg, and dizziness. What allergic reaction according to the Coombs-Gell classification has likely developed in the patient?
a. Stimulatory hypersensitivity reaction
b. Cytolysis
c. Anaphylactic reaction
d. Arthus reaction
e. Delayed hypersensitivity reaction

686. After the total resection of the stomach, the patient developed severe B_12-deficiency anemia with impaired hematopoiesis and altered erythrocytes appearing in the blood. What forms of erythrocytes indicate this disease in the patient, if they are present in the blood?
a. Megalocytes
b. Normocytes
c. Microcytes
d. Annulocytes (codocytes)
e. Ovalocytes

687. A patient with high risk of hemorrhages is recommended to take vicasol (menadione) by his physician. This drug is the structural analog of:
a. Vitamin B_5
b. Vitamin A
c. Vitamin B_6
d. Vitamin B_12
e. Vitamin K

688. Chemical equilibrium theory allows predicting the approaches that result in the maximum yield of medicines. What factor has no effect on the chemical equilibrium shift?
a. Temperature change
b. Addition of a catalyst
c. A change in the concentration of products
d. Pressure change
e. A change in the concentration of the initial substances

689. Some medicinal plants are poisonous. Select a poisonous plant from the list below:
a. Thymus serpilum
b. Origaum vulgare
c. Salvia officinalis
d. Digitalis purpurea
e. Thymus vulgaris

690. A solution containing calcium and magnesium cations is titrated with Trilon B solution. Complexometric titration of these cations requires the following medium:
a. Acetate buffer solution
b. Formate buffer solution
c. Neutral medium

d. Ammonium buffer solution
e. Acidic solution

691. What enzyme catalyzes the reaction of activation of amino acids and their attachment to a specific tRNA?
a. Ribonuclease
b. Nucleotidase
c. Deoxyribonuclease
d. DNA ligase
e. Aminoacyl-tRNA synthetase

692. A woman with peptic ulcer disease of the stomach was prescribed antibacterial treatment. It is aimed at the following pathogen:
a. E) colli
b. Cl. perfringens
c. St. aureus
d. H. pylori
e. Cl. trachomatis

693. Bacterioscopic examination of chancre material revealed some mobile, long, convoluted microorganisms with 8-12 regular coils. These features are typical for:
a. Campylobacter
b. Treponema
c. Leptospira
d. Borrellia
e. Vibrios

694. Name the difference in potentials that occurs due to uneven distribution of electrolytes between the outer and inner surfaces of the cell membrane:
a. Diffuse biopotential
b. Chemical biopotential
c. Surface biopotential
d. Contact biopotential
e. Membrane potential

695. An older patient exhibits low levels of red blood cells and hemoglobin in blood, but the color index is 1,3. Blood smear analysis revealed megaloblasts. What type of anemia is observed in this case?
a. Acquired hemolytic
b. Chronic posthemorrhagic
c. Iron-deficiency
d. Hereditary hemolytic
e. B_12-folic acid deficiency

696. During morphological description of common periwinkle it was defined that it has shoot that trails on the ground and takes root. It allows to chatacterize such shoot as:
a. Tenent
b. Scandent
c. Creeping
d. Twining
e. Recumbent

697. A woman with candidomycosis was prescribed a drug that is used in cases of fungal pathology of any localization and can cause diarrhea and toxic liver damage. What drug did the doctor prescribe in this case?
a. Chingamine (Chloroquine)
b. Mebendazole
c. Amoxicillin
d. Bicillin-5

e. Fluconazole

698. Some hormones are synthesized from amino acids in the body. What amino acid is the precursor to the thyroxine hormone?

a. Cysteine
b. Arginine
c. Tyrosine
d. Glutamine
e. Histidine

699. A bacillus was obtained from the patient's feces. The bacillus is comma-shaped, mobile, non-spore-forming, and has no capsule. On the solid alkaline medium it grows transparent colonies, on the alkaline peptone water it produces pale blue film in 6 hours. What causative agent can be suspected?

a. Salmonella
b. Escherichia
c. Proteus
d. Shigella
e. Cholera vibrio

700. Select from the list an adsorption indicator:

a. Eosin
b. Methyl-orange
c. Eriochrome black T
d. Phenolphthalein
e. Sulfosalicylic acid

701. Which of the following reactions is required in order to obtain an azo dye out of an aromatic amine?

a. Diazotization and azo compound
b. Diazotization and interaction with potassium cyanide
c. Salt formation and nitration
d. Alkylation and nitrosation
e. Reduction and diazotization

702. How will the rate of the chemical reaction 2NO(gas) + O_2(gas) = 2NO_2(gas) change if the pressure increases by three times?

a. The rate will increase by 27 times
b. The rate will decrease by three times
c. The rate will remain unchanged
d. The rate will decrease by 27 times
e. The rate will increase by three times

703. What anti-gout drug, based on its mechanism of action, is a urate-lowering agent and a xanthine oxidase inhibitor?

a. Urodan
b. Etamide
c. Urolesane
d. Allopurinol
e. Urosulfan (Sulfacarbamide)

704. Specify the standard solutions that are used in permanganatometry to quantify the oxidants by the residual titration method:

a. Cerium (IV) sulfate, iron (II) sulfate
b. Potassium iodate, sodium thiosulfate
c. Potassium dichromate, sodium thiosulfate
d. Potassium bromate, sodium thiosulfate
e. Potassium permanganate, iron (II) sulfate

705. A patient with gastric carcinoma has undergone several courses of radiation therapy. What system is the first to become functionally disturbed after the body was exposed to ionizing radiation?

a. Respiratory
b. Digestive
c. Urinary
d. Blood
e. Nervous

706. Gravimetry was used to analyze sodium sulfate crystalline hydrate by precipitating sulfate ions with a barium chloride solution. After its maturation, the barium sulfate precipitate must be washed using decantation. What is used as a washing liquid for this purpose?

a. Dilute solution of sulfuric acid
b. Sodium sulfate solution
c. Ammonium sulfate solution
d. Distilled water
e. Barium chloride solution

707. A patient with high fever and pain in throat when swallowing is diagnosed with tonsillitis. Which of the listed symptoms is a local feature of acute inflammation?

a. Fever
b. Leukocytosis
c. Reddening
d. Increased ESR
e. Tachycardia

708. Potentiometric methods of analysis are based on the use of:

a. Dependence of the volume of the titrant on the concentration of the analyte
b. Dependence of the mass of the precipitate on the concentration of the analyte
c. Dependence of the volume of the produced gas on the concentration of the analyte
d. Dependence of the electromotive force (EMF) of a galvanic cell on the concentration of the analyte
e. Dependence of the electric current on the concentration of the analyte

709. Hydrolytic destruction of compounds is carried out by a certain class of enzymes - hydrolases. What compounds are being hydrolyzed with proteases?

a. Higher fatty acids
b. Proteins
c. Glucose
d. Pyruvic acid
e. Carbon dioxide

710. An elderly patient has developed postoperative intestinal atony. What anticholinesterase drug should be prescribed?

a. Pilocarpine hydrochloride
b. Metoprolol
c. Atropine sulfate
d. Proserin
e. Dithylinum (Suxamethonium chloride)

711. What emulsions can be stabilized by emulsifiers, if the solubility of these emulsifiers is higher in water than in oil?

a. Emulsions of the second type
b. Concentrated emulsions
c. Dilute emulsions
d. Invert emulsions
e. Direct emulsions

712. Preliminary disinfection of air and working surfaces of the equipment was conducted in the operating room of the surgical inpatient unit. What method of sterilization would be the most advisable in this case?

a. Ultraviolet irradiation
b. High-frequency current
c. Irradiation sterilization
d. Flowing steam
e. Formaldehyde vapor

713. To accurately calculate the reaction velocity constant by the activation energy value, the steric factor is used, which takes into account:
a. Mutual orientation of the reacting molecules
b. Temperature of the reaction mixture
c. Chemical properties of the interacting compounds
d. Concentration of the reactants
e. Structure of the molecules in the interacting compounds

714. Catalysts are widely used in production of drugs. How can reaction acceleration in the presence of a catalyst be explained?
a. Activation energy increases
b. Collision frequency decreases
c. Total collision frequency increases
d. Activation energy decreases
e. Molecule speed increases

715. Name the method of sorption detoxification of the body, in which the adsorption of toxic substances occurs when the sorbent passes through the digestive system?
a. Lymphosorption
b. Enterosorption
c. Hemosorption
d. Contact therapy
e. Liquorosorption

716. A patient was found to have a tumor of the pancreatic head, which is accompanied by the impaired patency of the common bile duct. Blood test will reveal an increase in the following substance level:
a. Bilirubin
b. Adrenaline
c. Insulin
d. Urea
e. Hemoglobin

717. It is known, that HIV infection leads to severe immunologic disturbances in the body that result in the development of AIDS (acquired immune deficiency syndrome). What cells of the human body are the most susceptible to HIV infection?
a. Hepatocytes
b. B lymphocytes
c. T helper cells
d. Endotheliocytes
e. Suppressor T cells

718. To determine the end point of an acid-base titration the following indicators are used:
a. Adsorption indicators
b. Luminescent indicators
c. Redox indicators
d. Metal indicators
e. pH-indicators

719. What method of titrimetric analysis is used to quantify streptocide (sulfanilamide) with a KBrO_3 solution in the presence of KBr?
a. Vanadatometry
b. Bromatometry

c. Permanganometry
d. Iodometry
e. Dichromatometry

720. When determining substances by means of mercurimetric titration, the following solution is used as a titrant:
a. Ammonium thiocyanate
b. Silver(I) nitrate
c. Mercury(I) nitrate
d. Potassium iodide
e. Mercury(II) nitrate

721. Which one of the substances listed below is not a surfactant?
a. Sodium oleate
b. Sodium chloride
c. Sodium stearate
d. 1-Pentanol
e. Sodium palmitate

722. What drug can be used to stop a bronchospasm?
a. Atenolol
b. Salbutamol
c. Aspirin
d. Omnoponum
e. Amoxicillin

723. A patient with bronchial asthma was prescribed a drug with the mechanism of action that is primarily based on the stimulation of beta_2 adrenergic receptors. Name this drug:
a. Clonidine
b. Salbutamol
c. Droperidol
d. Adrenaline hydrochloride
e. Isadrine (Isoprenaline)

724. The brain is higly dependent on its supply with oxygen and energy substrates. Under physiological conditions, neurons utilize the following as an energy substrate:
a. Glucose
b. Higher fatty acids
c. Bilirubin
d. Amino acids
e. Cholesterol

725. Surfactants and high-molecular compounds are added into concentrated emulsions to stabilize them. These substances are:
a. Emulsifiers
b. Absorbents
c. Catalysts
d. Activators
e. Solvents

726. What cation is present in the solution, if its heating with an alkali produces a gas with pungent odor?
a. Silver(I)
b. Lead(II)
c. Mercury(II)
d. Ammonium
e. Mercury(I)

727. A 45-year-old patient with rheumatoid arthritis was prescribed a glucocorticoid. Name this drug:

a. Analgine (Metamizole)
b. Ibuprofen
c. Insulin
d. Prednisolone
e. Mefenamic acid

728. A dispensing chemist performs identification of pharmaceutical substance using ultraviolet spectrophotometry. The specialist obtains the graph of optical density to wavelength ratio, which is called:
a. Light absorbtion curve
b. Logarithmic curve
c. Emission spectrum
d. Calibration curve
e. Titration curve

729. When a mixture of electrolytes is added into a sol, one of them reduces the effect of another. Name this phenomenon:
a. Rheopexy
b. Antagonism
c. Additivity
d. Synergism
e. Phoresis

730. Name the ability of a drug to accumulate within the patient's body:
a. Allergy
b. Cumulation
c. Antagonism
d. Habituation
e. Synergism

731. A patient developed a hemorrhage caused by a long-term use of neodicumarin (ethyl biscoumacetate). What neodicumarin antagonist must be used in this case?
a. Etamsylate
b. Vicasol (Menadione)
c. Ascorbic acid
d. Fibrinogen
e. Aminocaproic acid

732. To reproduce Ehrlich carcinoma in a rabbit, a certain amount of benzpyrene (a polycyclic aromatic hydrocarbon) was daily applied to a dehaired patch of skin of the animal. What method is used for tumor modelling in this case?
a. Induction
b. Ionizing radiation
c. Hormone administration
d. Explantation
e. Transplantation

733. The end product of starch hydrolysis is:
a. Maltose
b. D-fructose
c. Saccharose
d. D-galactose
e. D-glucose

734. Foam aerosols are used for burn treatment. What type of dispersed systems are foams?
a. Solid-liquid
b. Solid-solid
c. Gas-liquid
d. Liquid-liquid

e. Liquid-solid

735. In microbiology class students have been growing pure bacterial culture. Bacterial inoculation of solid medium was performed to obtain separate visible colonies, resulting in two colonies, R-type and S-type, grown in thermostat after one day of incubation. What properties of microorganisms were described by students?

a. Tinctorial
b. Biochemical
c. Antigenic
d. Morphologic
e. Cultural

736. What hormone can cause hypernatremia and hypokalemia, if its secretion becomes increased?

a. Parathormone
b. Adrenaline
c. Aldosterone
d. Glucagon
e. Atrial natriuretic hormone (peptide)

737. A person diagnosed with ischemic heart disease presents with stable angina pectoris, atherosclerosis, and elevated plasma lipids. What class of lipids plays the main role in the pathogenesis of atherosclerosis?

a. Fatty acid-albumin complexes
b. High density lipoproteins
c. Chylomicrons
d. Low density lipoproteins
e. Triglycerides

738. A 40-year-old woman has been suffering from menorrhagia for a long time. Blood test: Hb- 90 g/L, erythrocytes - 3.9cdot10^12/L, color index - 0.69. What is the main cause of hypochromic anemia development in this case?

a. Insufficient iron intake with food
b. Non-absorption of iron in the body
c. Iron loss due to bleeding
d. Increased iron consumption
e. Vitamin B_12 deficiency

739. A child diagnosed with rheumatism was hospitalized. What microorganisms cause this disease?

a. Enterococci
b. Streptococci
c. Staphylococci
d. Meningococci
e. Pneumococci

740. During skill building session in the field of microbiology, a student performed inoculation of microorganisms into the solid nutrient medium to obtain isolated colonies. How should inoculation loops be sterilized after that?

a. Dry heat sterilization under 160^oC for 120-150 minutes
b. Soaking in 1% chloramine-B solution
c. Heating in the burner flame
d. Formaldehyde vapor sterilization
e. Boiling under 60^oC five times

741. A child with mental retardation is diagnosed with cretinism. What hormone deficiency is the main factor in the development of nervous system dysfunction in this disease?

a. Estrogens
b. Androgens
c. Catecholamines
d. Glucocorticoids

e. Thyroid hormones

742. What carboxylic acid is an aromatic monocarboxylic acid and can be used in treatment of skin diseases as an external antiseptic and fungicide?

a. Acetic acid
b. Benzoic acid
c. Valeric acid
d. Butyric acid
e. Formic acid

743. What should be used as an indicator electrode in potentiometric titration aimed at quantifying iron(II) sulfate?

a. Quinhydrone
b. Silver chloride
c. Platinum
d. Antimony
e. Glass

744. Rhizome and roots of Inula helenium have cavities without clear inner margins that are filled with essential oils. What are they?

a. Articulated laticifers
b. Resin ducts
c. Schizogenous cavities
d. Lysigenous cavities
e. Non-articulated laticifers

745. Pathogenic microorganisms are characterized by presence of aggression enzymes that determine their virulence. Select the aggression enzyme:

a. Carbohydrase
b. Oxidase
c. Lyase
d. Transferase
e. Hyaluronidase

746. Selective solvents are used in laboratories and factories to isolate and refine essential oils, alkaloids, antibiotics, and other pharmaceutical subctances. This process is called:

a. Flocculation
b. Extraction
c. Coagulation
d. Sedimentation
e. Flotation

747. Alkaline hydrolysis of esters (complex ethers) is called:

a. Etherification
b. Oxidation
c. Rearrangement
d. Condensation
e. Saponification

748. A 77-year-old man complains of shortness of breath, leg edemas, and cardiac pain. He suffers from chronic heart failure. What type of hypoxia is observed in this man?

a. Hypoxic hypoxia
b. Respiratory hypoxia
c. Blood hypoxia
d. Tissue hypoxia
e. Circulatory hypoxia

749. Quantitative determination of iodides by Fajans method is performed with adsorption indicators. The following can be used as an adsorption indicator:

a. Methyl orange
b. Phenolphthalein
c. Diphenylamine
d. Eosin
e. Murexide

750. Bacteriology of the feces of a patient with an acute intestinal infection allowed isolating a culture of Shigella sonnei. What serological reaction was used to identify the isolated culture?
a. Neutralization
b. Agglutination
c. Bacteriolysis
d. Complement binding
e. Precipitation

751. Examination of the patient's oral cavity detects roseola rash, pustules, and papules on the mucosa of the soft palate. Microscopy of the smears prepared from the discharge and stained according to Romanowsky-Giemsa revealed pale pink wavy microorganisms. What microorganisms are the likely cause of this pathology?
a. Treponema pallidum
b. Streptococci
c. Staphylococci
d. Candida fungi
e. Meningococci

752. What characteristic is used to choose indicator for titration analysis?
a. Transition interval
b. Titration curve jump
c. Titration indicator
d. Equivalence point
e. Indicator constant

753. C_7H_8O compound is an aromatic carbohydrate derivative and does not color with FeCl_3. Upon oxidation, it forms benzoic acid. Name this compound:
a. Benzyl alcohol
b. p-Cresol
c. o-Cresol
d. m-Cresol
e. Methylphenyl ether

754. A patient has developed anuria due to a severe blood loss (40% of blood volume). What is the leading mechanism of anuria development in this case?
a. Increased pressure in the glomerular capsule
b. Decreased number of functional glomeruli
c. Decreased hydrostatic pressure in the glomerular capillaries
d. Increased oncotic blood pressure
e. Decreased pressure in the glomerular capsule

755. Extraction is often used in analysis of medicinal substances. In this method, the degree of extraction of the substance that is being determined depends on the following:
a. The mass of the substance being extracted
b. The amount of the substance being extracted
c. Distribution coefficient
d. Temperature
e. pH of the solution

756. You are a hospital pharmacist. Consult the pediatrician, what group of antibiotics is contraindicated for children due to their effect on formation of the bone tissue:
a. Tetracyclines
b. Aminoglycosides

c. Macrolides
d. Penicillins
e. Glucocorticoids

757. A diuretic should be prescribed for treatment of cerebral edema. What drug is to be administered?
a. Caffeine and sodium benzoate
b. Hydrochlorothiazide
c. Furosemide
d. Spironolactone
e. Diacarb (Acetazolamide)

758. A 55-year-old man came to a doctor with complaints of acute pain in his big toes. Meat and wine are a permanent fixture 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. Lactate
c. Uric acid
d. Urea
e. Bilirubin

759. A structural analog of vitamin PP (nicotinic acid) is used as an antituberculous medicine. Name this medicine:
a. Streptocide
b. Isoniazid
c. Tetracycline
d. Riboflavin
e. Aspirin

760. Increased concentration of active oxygen forms is a mechanism of pathogenesis in a number of diseases. To prevent this process, antioxidants are prescribed. Select an antioxidant from the list below:
a. Glucose
b. Cobalamine
c. Glicerol
d. Calciferol
e. alpha-tocopherol

761. What indicator is used for the quantitative determination of sodium carbonate in a preparation by the method of acid-base titration?
a. Methylene blue
b. Diphenylamine
c. Murexide
d. Ferroin
e. Methyl orange

762. A chemotherapeutic agent has bactericidal effect against streptococci, staphylococci, bacilli, and clostridia. According to its action spectrum this drug belongs to the following group:
a. Antituberculous agents
b. Antiviral agents
c. Broad spectrum antifungal agents
d. Narrow spectrum antibacterial agents
e. Broad spectrum antibacterial agents

763. Common nettle, hop, black elderberry relate to the plants that require soils rich in nitrogen compounds, that is, such plants are called:
a. Calciphobes
b. Calciphiles
c. Nitrophytes

d. Nitrophobes
e. Halophytes

764. Leaves damage by mosaic discoloration has been detected at medicinal plantations. What microorganisms are the cause?
a. Rickettsia
b. Plant-pathogenic fungi
c. Protozoa
d. Plant-pathogenic bacteria
e. Plant-pathogenic viruses

765. Fibrillar proteins can be characterized by the presence of several parallel polypeptide chains in their structure. What fibrillar protein is a component of hair, skin, and nails?
a. Globulin
b. Prothrombin
c. Albumin
d. Keratin
e. Histone

766. A female patient asked a pharmacist to recommend her a drug for headache with antiplatelet effect. Specify this drug:
a. Codeine phosphate
b. Tramadol
c. Acetylsalicylic acid
d. Promedol
e. Fentanyl

767. What characteristic is used in titrimetric methods of analysis, when choosing the indicator?
a. Titration index
b. Titration jump
c. Transition interval
d. Neutralization point
e. Indicator constant

768. A patient with bronchial asthma had been prescribed salbutamol, which led to disappearance of bronchiospasm symptoms. It happened due to stimulation of:
a. alpha_1-adrenoreceptors
b. beta_1-adrenoreceptors
c. Acetylcholine synthesis
d. beta_2-adrenoreceptors
e. Muscarinic acetylcholine receptors

769. A patient with bronchial asthma was prescribed a drug to stop an attack of the disease. The drug's mechanism of action is based on stimulation of beta_2-adrenergic receptors primarily. Name this drug:
a. Salbutamol
b. Isadrine (Isoprenaline)
c. Clophelin (Clonidine)
d. Droperidol
e. Epinephrine hydrochloride

770. It is a known fact, that human body in a day synthesizes approximately 80 g of glucose due to gluconeogenesis. What organ performs this process primarily?
a. Liver
b. Heart
c. Brain
d. Skeletal muscles
e. Stomach

771. In the process of conductometric titration of HCl and CH_3COOH acids mixture 0,1 M solution of NaOH is used to measure:

a. Electrical conduction in solution
b. Rotation angle of polarized light plane
c. Potential difference
d. pH of medium
e. Refractive index

772. Salicylic acid and its derivatives are widely used in medicine. This compound belongs to the following class of chemicals:

a. Alcohols
b. Hydroxycarboxylic acids
c. Alkanes
d. Aldehydes
e. Heterocyclic compounds

773. One of the important diagnostic features of garden sage and motherwort is their shape of corolla. Their flowers have the following type of corolla:

a. Ligulate
b. Pseudoligulate
c. Thimble-shaped
d. Bilabiate
e. Funnelform

774. A patient at the gastroenterological department presents with disturbed digestion of proteins, which is why the activation of the decay of proteins can be observed in the patient's large intestine. What compound forms in a large amount under these conditions?

a. Glycerine
b. Glycogen
c. Cholesterol
d. Glucose
e. Putrescine

775. During the microbiological diagnostics of syphilis, it became necessary to study the nature and degree of mobility of the causative agent. What type of microscopy is used for this purpose at a bacteriological laboratory?

a. Fluorescent microscopy
b. Dark-field microscopy
c. Light-field microscopy
d. Electron microscopy
e. X-ray microscopy

776. A child has been hospitalised with scalded skin syndrome. Staphylococcus aureus was detected in blisters. What virulence factor causes exfoliation and necrosis of epidermis?

a. Hemolysin
b. Toxic shock syndrome toxin
c. Exfoliative toxin
d. Hyaluronidase
e. Enterotoxin

777. Pharmacy sells glaucine hydrochloride to a patient with chronic bronchitis. What common side effect should he be warned about?

a. Decrease of arterial pressure
b. Allergic skin rashes
c. Excitation of central nervous system
d. Disruption of cardiac rate
e. Increase of intraocular pressure

778. A 28-year-old patient has a subfebrile fever. This type of fever is observed when body

temperature fluctuates within the following range:
a. Over 41^oC
b. 36.6--37^oC
c. 39--41^oC
d. 38--39^oC
e. 37--37.9^oC

779. What cations have the highest mobility among those listed below?
a. Lithium cations
b. Sodium cations
c. Hydroxonium cations
d. Ammonium cations
e. Potassium cations

780. What method is used for the quantification of magnesium sulfate solution for injections?
a. Nitritometry
b. Complexonometry
c. Acid-base titration
d. Cerimetry
e. Iodine monochloride titration

781. What substance is used as a primary standard in permanganometry, bromatometry, dichromatometry, iodometry, and cerimetry?
a. Sodium chloride
b. Arsenic(III) oxide
c. Potassium hydroxide
d. Sodium carbonate
e. Ammonium acetate

782. A 25-year-old-patient with the II degree thermal burns came to the doctor. Objectively: there are large blisters on the upper limbs; the blisters are filled with clear exudate consisting mostly of water and albumines with isolated leukocytes. Name this type of exudate:
a. Serous
b. Purulent
c. Hemorrhagic
d. Catarrhal (mucous)
e. Fibrinous

783. What factor of those named below is leading in developing symptom group characteristic of altitude sickness?
a. Solar radiation
b. Daytime and nighttime temperature difference
c. Decrease of oxygen partial pressure in air
d. Speed of ascent
e. Heavy physical exertion

784. Explain to a doctor, what drug has the effect, closest to acetylcysteine, and can be used as its substitute, if acetylcysteine is not available in a pharmacy:
a. Ambroxol
b. Sodium bicarbonate
c. Sodium chloride
d. Libexin (Prenoxdiazine)
e. Codeine phosphate

785. A patient has been hospitalised with diagnosis of diabetes mellitus I type. Decreased rate of oxaloacetate forming is one of the metabolic changes present in the patient. What metabolic process is disrupted as a result?
a. Cholesterol synthesis
b. Glycogen mobilization

c. Citric acid cycle
d. Glycolysis
e. Urea synthesis

786. A 62-year-old man was hospitalized into the cardiology department in a severe condition with the diagnosis of acute myocardial infarction in the posterior wall of the left ventricle and septum, pulmonary edema. What is the primary mechanism of pulmonary edema development in this patient?
a. Decreased alveolocapillary oxygen diffusion
b. Pulmonary arterial hypertension
c. Hypoxemia
d. Pulmonary venous hypertension
e. Acute left ventricular failure

787. What anions form a precipitate soluble in 12% ammonium carbonate solution as a result of their interaction with a silver(I) nitrate solution?
a. Chloride ions
b. Thiocyanate ions
c. Sulfide ions
d. Bromide ions
e. Iodide ions

788. It is determined that genetic basis of extrachromosomal stability is defined by the elements containing genes that provide for cell resistance to certain drugs, primarily antibiotics. What elements are these?
a. Cytoplasm
b. Nucleoid
c. R-plasmids
d. Golgi apparatus
e. Mitochondrion

789. A person with essential hypertension was prescribed lisinopril. What is the typical side effect of this medicine?
a. Insomnia
b. Constipation
c. Dry cough
d. Vomiting
e. Increased appetite

790. After accidentally eating inedible mushrooms, a woman presents with disturbed consciousness, anuria, arterial hypotension, and hyperazotemia. What pathological condition can be characterized by these symptoms?
a. Urolithiasis
b. Acute pyelonephritis
c. Acute renal failure
d. Acute diffuse glomerulonephritis
e. Chronic renal failure

791. If the amount of high-molecular substance added to the given sol is extremely small, it is possible its stability will decrease, instead of increase. What is this phenomenon called?
a. Solubilization
b. Sensitization
c. Syneresis
d. Synergism
e. Sedimentation

792. What drug is administered in case of uterine inertia?
a. Oxytocin
b. Vikasolum
c. Fenoterol

d. No-spa
e. Progesterone

793. A 62-year-old woman with transmural myocardial infarction has developed heart failure. What is the pathogenetic mechanism of heart failure development in this case?
a. Myocardial reperfusion injury
b. Volume overload of the heart
c. Acute cardiac tamponade
d. Pressure overload of the heart
e. Decreased mass of functioning cardiomyocytes

794. A laboratory received ethanol and methanol. What reaction can be used to distinguish between these two substances?
a. Formation of a chelate complex with copper hydroxide
b. Iodoform test (I_2 + NaOH)
c. Oxidation (CrO_3, H_2SO_4)
d. Beilstein test
e. Reaction with halogen anhydrides of inorganic acids

795. Separation of substances in gas-liquid chromatography occurs due to the different speed of movement of substances through the column. What is the mobile phase in this method of analysis?
a. Liquid phases
b. Organic solvent
c. Solid carrier
d. Carrier gas
e. Water

796. A certain drug is a first-line antituberculosis agent. Its possible side effects include polyneuritis, hepatotoxicity, mental disorders, and allergic reactions. Name this drug.
a. Meloxicam
b. Clotrimazole
c. Atropine
d. Isoniazid
e. Adrenaline hydrochloride

797. A patient with hyperproduction of thyroid hormones has been prescribed Merkazolilum. This drug inhibits the following enzyme of iodothyronine synthesis:
a. Reductase
b. Iodide peroxidase
c. Aminotransferase
d. Aromatase
e. Decarboxylase

798. The following have been detected in hand lavage of the kindergarten chef: colibacilli, ray fungi, staphylococci, bacilli, mold fungi. What microbes are evidential of fecal contamination of hands?
a. Staphylococci
b. Mold fungi
c. Ray fungi
d. Colibacilli
e. Bacilli

799. A doctor has prescribed an adrenocortical hormone drug for a patient with bronchial asthma. Specify this drug.
a. Diclofenac sodium
b. Salbutamol
c. Prednisolone
d. Loratadine
e. Atropine sulfate

800. "Collargol" pharmaceutical preparation is a colloidal solution of silver that contains a high-molecular compound. What is the function of this compound?

a. Increases aggregate stability
b. Facilitates sedimentation
c. Increases degree of dispersion
d. Induces coagulation
e. Decreases aggregate stability

801. The following belongs to high-concentration suspensions:

a. Creams
b. Powders
c. Ointments
d. Foams
e. Pastes

802. Pharmacological action of enterosgel (methylsilicic acid hydrogel, polymethylsiloxane polyhydrate) is based on a certain phenomenon characteristic of disperse systems. Name this phenomenon:

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

803. What rule describes the coagulation of sols under the effect of electrolytes?

a. Schulze-Hardy rule
b. Gibbs rule
c. Van 't Hoff rule
d. Duclos–Traube rule
e. Arrhenius equation

804. An analytical chemist conducts a systematic analysis of a mixture of anions. What reagents are used in the test for oxidizing anions?

a. HCl in the presence of amyl alcohol
b. Na_2C_2O_4
c. Ba(NO_3)_2
d. KI in the presence of chloroform
e. AgNO_3 in the presence of HNO_3

805. The pharmacy of a tuberculosis clinic has received tuberculin. What is the purpose of this substance?

a. Specific prevention of tuberculosis
b. Phagotyping of mycobacteria
c. Allergic diagnostics of tuberculosis
d. Serological diagnostics of tuberculosis
e. Specific therapy of tuberculosis

806. Select a Brassicaceae family plant that contains glycosides similar in action to those obtained from foxglove:

a. Polygonum aviculare
b. Erysimum canescens
c. Urtica dioica
d. Primula officinalis
e. Arctostaphylos uva-ursi

807. Paracetamol has antipyretic and analgesic effect. In the human body it is neutralized in the following organ:

a. Heart
b. Liver

c. Lungs
d. Spleen
e. Intestine

808. Ultraviolet irradiation is used in medicine in various physiotherapeutic procedures. What mechanism of medicinal action is characteristic of ultraviolet rays?
a. Activation of drug action
b. Activation of vitamin D synthesis
c. Decrease of melanin synthesis in the skin
d. Activation of lipid peroxidation
e. Intensification of cell division

809. The presence of storage proteins in a microslide prepared from Phaseolus vulgaris endosperm can be confirmed, if the microslide colors golden-yellow when stained with Lugol solution. In plant seeds, such protein deposits are called:
a. Starch grains
b. Aleurone grains
c. Chlorophyll grains
d. Inulin
e. Glycogen

810. Metal ions in the blood are transported in a complex with proteins. What blood protein contains copper?
a. Fibrinogen
b. Albumin
c. Fibrinolysin
d. Ceruloplasmin
e. Thrombin

811. What solution has the highest osmotic pressure at the temperature of 298 K?
a. Sodium benzoate solution
b. Aluminum sulfate solution
c. Glucose solution
d. Urea solution
e. Sodium sulfate solution

812. A miner, who was trapped under a rock pile, developed crush syndrome and signs of hepatic coma. Hyperammonemia was detected in his blood. What process has caused the increase in the ammonia levels in the patient's blood?
a. Bilirubin catabolism
b. Hydroxylation of amino acids
c. Deamination of amino acids
d. Glycolysis
e. Gluconeogenesis

813. A chemist-analyst performs a qualitative analysis of group IV cations. Why is a 3% hydrogen peroxide solution added in the process?
a. Conversion of ions to a higher degree of oxidation
b. Sediment formation
c. Formation of colored compounds
d. Conversion of ions to a lower degree of oxidation
e. Gas removal

814. What is the main substrate for eicosanoid synthesis in the human body?
a. Stearic acid
b. Caproic acid
c. Palmitic acid
d. Oleic acid
e. Arachidonic acid

815. What reaction occurs when ascorbic acid is being determined by means of iodometry?

a. Redox
b. Neutralization
c. Precipitation
d. Acylation
e. Complex formation

816. Plant fatty acids have an odd number of carbon atoms. What product forms as a result of beta-oxidation of fatty acids with an odd number of carbon atoms?

a. Stearoyl-CoA
b. Oxymethylglutaryl-CoA
c. Palmitoyl-CoA
d. Acetoacetyl-CoA
e. Propionyl-CoA

817. Most antidepressants are nonselective monoamine oxidase inhibitors (MAOIs) --- they inhibit flavin-containing enzymes that catalyze oxidative deamination of monoamines in the mitochondria of brain neurons. Name the coenzyme of MAO:

a. Pyridoxal phosphate
b. Nicotinamide adenine dinucleotide
c. Thiamine pyrophosphate
d. Coenzyme A
e. Flavin adenine dinucleotide

818. Disperse systems compose a large part of all dosage forms. Point out the bound disperse system:

a. Aerosol
b. Lyosol
c. Gel
d. Suspension
e. Emulsion

819. Transverse section of an axial organ has revealed conductive bundle with phloem and xylem radiating in separate alternate areas. Name the organ and type of conductive bundle:

a. Bundle is amphicribal (hadro centric), organ is fern rhizome
b. Bundle is collateral closed, organ is monocotyledon stem
c. Bundle is radial, organ is root of primary structure
d. Bundle is amphivasal (lepto centric), organ is monocotyledon rhizome
e. Bundle is collateral open, organ is dicotyledon stem

820. The breakdown of starch in the body is a catalytic process that occurs with the help of amylase. What type of catalysis is it?

a. Autocatalysis
b. Acid-base catalysis
c. Heterogeneous catalysis
d. Enzymatic catalysis
e. Redox catalysis

821. What geometrical shape does methane molecule have?

a. Spherical
b. Tetrahedral
c. Linear
d. Planar
e. Triangular

822. A doctor needs to prescribe the patient a drug for replacement therapy after thyreoidectomy. What drug would you recommend?

a. Prednisolone
b. Thiamazole

c. L-thyroxine
d. Parathyroidin
e. Insulin

823. A sailor, who had been at sea for 10 months, developed bleeding gums and mobility and loss of healthy teeth. After an examination he was diagnosed with scurvy. What vitamin is deficient in this case, causing this disease?
a. Folic acid
b. Nicotinic acid
c. Vitamin C
d. Vitamin E
e. Vitamin D

824. A woman is to be prescribed a narcotic analgesic for labor pain relief. What drug is indicated in this case?
a. Codeine
b. Papaveretum (Omnopon)
c. Morphine
d. Fentanyl
e. Promedol (Trimeperidine)

825. A man with gout has a significant increase in blood levels of uric acid. Uric acid is an end product of the metabolism of:
a. Albumins
b. Fatty acids
c. Triglycerides
d. Globulins
e. Purine bases

826. Alimentary hyperglycemia is observed after eating carbohydrate-rich foods. What hepatocyte enzyme activity is induced the most in this case?
a. Isocitrate dehydrogenase
b. Phosphorylase
c. Aldolase
d. Glucokinase
e. Glucose-6-phosphatase

827. What drug is advisable for individual malaria prophylaxis?
a. Gentamicin
b. Trimethoprim/sulfamethoxazole (Co-trimoxazole)
c. Chingamin
d. Ampicillin
e. Rifampicin

828. The Fajans-Khodakov method is used to determine the mass fraction of sodium chloride (NaCl) in a drug. What indicator is used in this titration method?
a. Potassium chromate
b. Methyl red
c. Fluorescein
d. Ammonium iron(III) sulfate
e. Phenolphthalein

829. A patient with heart failure has developed acute edematous syndrome. What drug should be prescribed to make the edemas recede?
a. Nifedipine
b. Nitroglycerine
c. Furosemide
d. Propranolol
e. Panangin (Potassium aspartate and magnesium aspartate)

830. Nitrite ions can be detected in the presence of nitrate ions using the following:
a. Diphenylcarbazone
b. Crystalline antipyrine in the presence of diluted HCl
c. Crystalline iron (III) sulfate
d. Crystalline sodium thiosulfate
e. Dimethylglyoxime

831. Blood test of a patient, who had been taking non-steroidal anti-inflammatory drugs for a long time, detected a sharp decrease in the amount of neutrophilic granulocytes, basophils, and eosinophils against the background of leukopenia. What pathological condition has developed in the patient?
a. Anemia
b. Leukocytosis
c. Agranulocytosis
d. Leukemia
e. Aleukia

832. Chromatographic methods can be classified by the mechanism of the separation process. What type of chromatography is gas-liquid chromatography?
a. Distribution chromatography
b. Gel-filtration chromatography
c. Affinity chromatography
d. Ion-exchange chromatography
e. Adsorption chromatography

833. Calcium cations can be used as components of pharmaceuticals. Pharmacopoeial reaction for the detection of calcium cations is a reaction with a solution of:
a. Ammonium hydroxide
b. Ammonium oxalate
c. Hydrochloric acid
d. Potassium iodide
e. Sodium hydroxide

834. Conducting tissue cells are live and connected to the sieve tube elements. It is characteristic of:
a. Companion cells
b. Vessels
c. Collenchyma
d. Tracheids
e. Sclerenchyma

835. A patient with arthritis of the knee had been prescribed a certain drug for pain management. With time this drug provoked development of peptic ulcer disease of the stomach in this patient. Name this drug:
a. Diclofenac sodium
b. Phenobarbital
c. Fentanyl
d. Novocaine
e. Diazepam

836. An enzyme transports structure fragments from one substrate into another. Name this class of enzymes:
a. Transferases
b. Isomerases
c. Oxidoreductases
d. Hydrolases
e. Ligases

837. Name the method of binding foreign ions in an analysis:
a. Analytical concentration

b. Analytical separation
c. Analytical coprecipitation
d. Analytical extraction
e. Analytical masking

838. A female student with a cold has been prescribed an antipyretic medication. Specify this drug:
a. Famotidine
b. Ascorbic acid
c. Oxytocin
d. Cyanocobalamin
e. Paracetamol

839. In hot weather on the leaf tips of Tilia cordata and on the crenations along its leaf edges, drops of liquid are released through the water stomata. Name the structures located on the plant leaves, through which liquid water can be passively released:
a. Hydatodes
b. Osmophores
c. Glandules
d. Hydropotes
e. Nectaries

840. A man has been hospitalized into the intensive care unit in a severe condition after carbon monoxide poisoning. What substance has formed in this case, causing the severe condition in the patient?
a. Carbhemoglobin
b. Methemoglobin
c. Fetal hemoglobin
d. Carboxyhemoglobin
e. Oxyhemoglobin

841. A patient with arterial hypertension has been taking a beta-adrenergic blocker for a long time. When his condition improved he abruptly stopped taking the drug, which resulted in sharp elevation of his blood pressure. Name this type of therapy complication:
a. Dysbiosis
b. Bradycardia
c. Bronchospasm
d. Withdrawal syndrome
e. Drug tolerance

842. After the pus sample taken from the urethra had been inoculated on ascitic agar, it resulted in growth of round transparent colonies. Microscopy of the colonies shows gram-negative kidney bean-shaped diplococci. What causative agent is it?
a. Meningococcus
b. Micrococcus
c. Pneumococcus
d. Streptococcus
e. Gonococcus

843. For diagnostics of meningitis, smears of the cerebrospinal fluid sediment, stained using the Gram technique are being studied. What finding can confirm the diagnosis of meningococcal infection?
a. Gram-negative diplococci located within leukocytes and outside of them
b. Gram-positive diplococci located within leukocytes
c. Diplococci surrounded by a capsule
d. Lancet-shaped Gram-positive diplococci
e. Gram-negative cocci bacteria located within leukocytes

844. What substance causes impaired biotin absorption?
a. Albumin
b. Transferrin

c. Globulin
d. Avidin
e. Ferritin

845. What medium is necessary for determining the halide ions argentometrically using the Volhard method?
a. Neutral medium
b. Nitric acid medium
c. Acetic acid medium
d. Strong alkaline medium
e. Weak alkaline medium

846. A 33-year-old female patient, who undergoes long-term treatment due to chronic polyarthritis, complains of increased arterial pressure, adipose tissue redistribution and menstrual irregularities. What drug does the patient take?
a. Fluocinolone acetonide
b. Diclofenac sodium
c. Indometacin
d. Prednisolone
e. Phenylbutazone

847. In the process of coagulation by mixtures of different electrolytes, they seem to counteract each other's effect. Name this phenomenon:
a. Synergism
b. Antagonism
c. Mutual coagulation
d. Sedimentation
e. Additivity

848. A pharmacy needs to sterilize a liquid dosage form by means of a mechanical sterilization method. What device should be used for this purpose?
a. Seitz filter
b. Pasteur oven
c. Steam sterilizer
d. Koch apparatus
e. Autoclave

849. A patient with acute renal failure in the polyuria stage has azotemia that not only did not decrease, but continues to deteriorate. What caused polyuria in this case?
a. Increased reabsorption
b. Increased secretion
c. Increasd filtration
d. Decreased filtration
e. Decreased reabsorption

850. The defensive mechanisms against some infectious diseases can be greatly reinforced with interferon. Interferon preparations will be the most advisable in cases of the following type of infections:
a. Helminthic
b. Protozoal
c. Microbioses
d. Viral
e. Fungal

851. What type of tautomerism is characteristic of monosaccharide?
a. Aci-nitro
b. Lactam-lactim
c. Keto-enol
d. Oxo-cyclo (ring-chain)

e. Azole

852. To relieve dry cough, a patient with bronchitis was prescribed a drug that is an alkaloid of yellow horned-poppy. Name this drug:
a. Oxeladin
b. Libexin (Prenoxdiazine)
c. Codterpin
d. Codeine phosphate
e. Glaucine hydrochloride

853. After examination, the patient was diagnosed with alkaptonuria. What enzyme is deficient in this case, causing this pathology?
a. Phenylalanine hydroxylase
b. Tyrosinase
c. Thyroxine hydroxylase
d. Homogentisic acid oxidase
e. Monoamine oxidase

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

855. A patient with frequent recurrent chronic bronchitis is prescribed a sulfanilamide drug. This drug is an analog of the following compound:
a. Citric acid
b. Formic acid
c. Uric acid
d. Lactic acid
e. P-aminobenzoic acid

856. What sanitary-indicative microorganisms are used for the assessment of the microbial contamination levels of potable water?
a. Streptococcus viridans
b. Escherichia coli
c. Clostridium perfringens
d. Candida albicans
e. Staphylococcus aureus

857. Silver nitrate solution has been added to the solution containing anions of the first analytical group. It resulted in yellow precipitate. That means the following are present in the solution:
a. Arsenite ions
b. Arsenate ions
c. Iodide ions
d. Bromide ions
e. Sulphate ions

858. Research of reaction rate dependance from various factors allows to intensify technological processes. What factor textbfHAS NO effect on reaction rate constant?
a. Reagents nature
b. Temperature
c. Reacting agents concentration
d. Solvent nature
e. Solid substance dispersion degree

859. A woman complains of elevated body temperature, weight loss, irritability, palpitations, and

exophthalmos. Such changes are characteristic of the following endocrinopathy:
a. Hypoaldosteronism
b. Hyperaldosteronism
c. Hypercorticism
d. Hyperthyroidism
e. Hypothyroidism

860. During feces analysis of a 3-month-old child with signs of enteric infection, numerous dark-red colonies have grown on Endo agar. What microorganisms can be the causative agents of this enteric infection?
a. Escherichia
b. Gonococci
c. Salmonellae
d. Shigella
e. Streptococci

861. A patient with current coronary heart disease who has had two myocardial infarctions of left ventricular wall presents with bubbling breathing and dyspnea. Pulmonary auscultation reveals moist crackles. What kind of heart failure is it?
a. Subcompensated
b. Left ventricular
c. Right ventricular
d. Compensated
e. Combined

862. Analysis of a sedative herbal tea detects yellow-green infructescences (microstrobiles) formed by bract scales with a tile-like arrangement and small nut-like fruits. What plant can be characterized by such features?
a. Alnus glutinosa
b. Humulus lupulus
c. Ephedra distachya
d. Schizandra chinensis
e. Juniperus communis

863. Fatty acids are being synthesized in human body. What compound is intial in this synthesis process?
a. Cholesterol
b. Succinate
c. Glycine
d. Acetyl-CoA
e. Vitamin C

864. What medicine must be prescribed to a patient diagnosed with rheumatoid arthritis, if this patient's medical history indicates gastritis as a concomitant diagnosis?
a. Indomethacin
b. Aspirin (acetylsalicylic acid)
c. Celecoxib
d. Diclofenac
e. Ibuprofen

865. A person was hospitalized into the infectious department with the body temperature of 39^oC, headache, and chills. Spiral-shaped microorganisms stained violet according to the Romanowsky-Giemsa technique were detected in the thick blood smear. What microorganisms were detected in the patient?
a. Clostridia
b. Borrelia
c. Actinomycetes
d. Treponema

e. Leptospira

866. During a preoperative examination, prothrombin deficiency was detected in the patient's blood. What must be prescribed in this case in advance to reduce the blood loss during the surgery?
a. Contrykal (Aprotinin)
b. Phenylin (Phenindione)
c. Vicasol (Menadione)
d. Aminocaproic acid
e. Thrombin

867. What types of inflorescence are characteristic of the Cruciferae family?
a. Corymb or spike
b. Head or corymb
c. Head or umbel
d. Spadix or panicle
e. Tassel or panicle

868. What drug is indicated in case of an overdose of depolarizing muscle relaxants?
a. Unithiol
b. Metoprolol
c. Prozerin (Neostigmine)
d. Naloxone
e. Magnesium sulfate

869. Amperometric titration is used in analysis of some pharmaceutical preparations. The amperometric titration method is based on the following:
a. Measuring the cell voltage during the titration
b. Measuring the potential difference of the electrodes during the titration process
c. Determining the equivalence point by a sharp change in the diffusion current during the titration process
d. Ion exchange between the analyte solution and cationite
e. Ion exchange between the anionite and analyte solution

870. During ultrasound investigation a patient was diagnosed with bilateral renal artery stenosis of atherosclerotic genesis. Specify the bioactive substance that due to its excessive secretion is the key component of arterial hypertension pathogenesis in the given case:
a. Noradrenaline
b. Renin
c. Cortisol
d. Thyroxin
e. Vasopressin

871. 1 minute after a patient had been administered penicillin the patient's arterial pressure sharply dropped, pulse became thready, cold sweating and clonic convulsions began. Name this condition:
a. Traumatic shock
b. Septic shock
c. Burn shock
d. Cardiogenic shock
e. Anaphylactic shock

872. What mucolytic agent would you recommend for the patient with acute bronchitis to facilitate expectoration?
a. Glaucine
b. Acetylcysteine
c. Hydrocodone
d. Libexin (Prenoxdiazine)
e. Codeine

873. Select from the list a compound that is a pyridinecarboxylic acid:

a. Uric acid
b. Barbituric acid
c. Malic acid
d. Nicotinic acid
e. Benzoic acid

874. On examination the doctor suspects Cushing syndrome in the patient. This preliminary diagnosis can be confirmed by elevated levels of the following substance in the patient's blood:
a. Cortisol
b. Tocopherol
c. Cholesterol
d. Retinol
e. Adrenaline

875. Mercurometry is used for quantification of halide ions in their interaction with solutions of mercury salts (Hg_2^2+). What indicator allows analytical visualization of complete precipitation of halide ions?
a. Methyl orange
b. Potassium dichromate
c. Eosin
d. Diphenylcarbazone
e. Fluorescein

876. Select a metallochromic indicator from the list below.
a. Eosin
b. Methyl orange
c. Litmus
d. Starch
e. Murexide

877. An athlete is recommended to take carnitine to improve his achievements. What process does carnitine activate?
a. Glucose transport
b. Vitamin K transport
c. Fatty acids transport
d. Vitamin B_12 transport
e. Amino acids transport

878. Among dosage forms there are numerous disperse systems. Select a free disperse system from the list:
a. Diaphragm
b. Gel
c. Jelly
d. Emulsion
e. Membrane

879. Ammonium iron(III) sulfate can be used as an indicator in:
a. Acidimetry
b. Argentometry, Mohr method
c. Alkalimetry
d. Argentometry, Volhard method
e. Complexometric titration

880. Blood contains erythrocytes with sizes of 10^-6 m degree as its constituent parts. What type of disperse system is blood?
a. Colloidal dispersion
b. Homogeneous
c. Coarse dispersion
d. Microheterogeneous

e. Heterogeneous

881. Microscopy of the patient's vaginal smear detected trichomonads. What antimicrobial drug must be prescribed for treatment in this case?

a. Metronidazole

b. Ethambutol

c. Biseptol (Co-trimoxazole)

d. Fluconazole

e. Clotrimazole

882. A patient with a diagnosis of drug poisoning has been admitted to a resuscitation department. The patient is in grave condition. Respiration is rapid, superficial, with periods of apnea (Biot's respiration). What was the main cause of the development of periodic breathing in the patient?

a. Diminished chest mobility

b. Pulmonary dysfunction

c. Impaired function of spinal cord motoneurons

d. Impaired function of the neuromuscular system

e. Inhibition of the respiratory center function

883. What compound has no carboxyl group but nevertheless is called an acid?

a. Malic acid

b. Tartaric acid

c. Valeric acid

d. Picric acid

e. Lactic acid

884. During analysis of a herbal raw material, a culture was grown on a nutrient medium. The culture looks like a black furry plaque. Unseptated mycelial filaments with spherical thickenings at their ends were found in the smear preparations. Name these microorganisms:

a. Candida

b. Actinomyces

c. Aspergillus

d. Penicillium

e. Mucor

885. In microbiology, the Gram method is the main method for bacteria differentiation by means of staining. In this method, bacteria differentiation into Gram-positive and Gram-negative ones is based on their:

a. Chemical composition of the capsule

b. Cell size

c. Cell wall structure

d. Cytoplasmic membrane structure

e. Presence of ribosomes

886. What drug should be administered for individual prevention of malaria?

a. Rifampicin

b. Chingamin

c. Biseptol (Co-Trimoxazole)

d. Ampicillin

e. Gentamicin

887. What method of microspecimen staining is used to detect Mycobacterium tuberculosis?

a. Romanowsky-Giemsa stain

b. Gram stain

c. Ziehl-Nielsen stain

d. Neisser stain

e. Burri-Gins stain

888. After a stress, a woman has problems sleeping. What medicine is preferable for the treatment of

insomnia in this case?
a. Chloral hydrate
b. Phenobarbital
c. Barbital
d. Nitrazepam
e. Aminazine (Chlorpromazine)

889. Racemose clusters of calcium carbonate crystals are detected among the waste products of a protoplast. These crystals are:
a. Raphides
b. Styloid crystals
c. Crystal druses
d. Isolated crystals
e. Cystoliths

890. What feature of a leaf is characteristic of Poaceae?
a. Petiole
b. Stipules
c. Ochrea
d. Leaf sheath
e. Leaf blade

891. There are plants selected, that have tubular, ligulate, pseudoligulate and funnelform flowers, clustered in simple flowerheads. These plants belong to the following family:
a. Tiliaceae
b. Solanaceae
c. Ericaceae
d. Valerianaceae
e. Asteraceae (Compositae)

892. The pharmacological effect of some antidepressants is associated with detoxification of biogenic amines in the brain. What enzyme inactivates biogenic amines?
a. Decarboxylase
b. Transaminase
c. Lactate dehydrogenase
d. Monoamine oxidase
e. Deaminase

893. The patient with parkinsonism has been prescribed a drug - dopamine precursor - to relieve muscular rigidity. Name this drug:
a. Atropine sulphate
b. Paracetamol
c. Levodopa
d. Aminazine
e. Scopolamine hydrobromide

894. A skin area turned red after an exposure to high temperature. What local circulatory disorder can be observed in the focus of the acute inflammation, resulting in the ''rubor''?
a. Arterial hyperemia
b. Ischemia
c. Thrombosis
d. Venous hyperemia
e. Stasis

895. What coordinates are used to build monomolecular adsorption isotherms?
a. Inverse adsorption - inverse concentration
b. Inverse adsorption - concentration
c. Adsorption - concentration
d. Logarithm of adsorption - concentration

e. Surface tension - concentration

896. What ion has the maximum coagulating effect when added into positively charged sols?
a. Cl^-
b. PO_4^3-
c. K^+
d. SO_4^2-
e. Al^3+

897. The secondary structure of eukaryotic DNA is a double helix. What bonds keep the strands of DNA molecule together?
a. Ester
b. Hydrogen
c. Peptide
d. Glycosidic
e. Disulfide

898. The following method can be used to quantitatively determine magnesium sulfate in the solution:
a. Thiocyanate titration
b. Acidimetry
c. Argentometry
d. Complexometric titration
e. Nitrite titration

899. The population is being vaccinated for specific disease prevention. What type of immunity is developed as the result of this vaccination?
a. Artificially acquired passive
b. Naturally acquired active
c. Naturally acquired passive
d. Artificially acquired active
e. -

900. What groups of antibiotics can be classified as beta-lactam antibiotics?
a. Penicillins, cephalosporins, monobactams, carbapenems
b. Penicillins, cephalosporins, tetracyclines
c. Cephalosporins, monobactams, aminoglycosides
d. Cephalosporins, macrolides, aminoglycosides
e. Penicillins, cephalosporins, macrolides, carbapenems

901. What drug is used as an antidote in cases of overdose with narcotic analgesics?
a. Atropine
b. Cordiamine (Nikethamide)
c. Ephedrine
d. Naloxone
e. Unithiol

902. Calendula officinalis as a representative of Asteraceae family can be characterized by the following type of inflorescence:
a. Capitulum
b. Anthodium
c. Umbel
d. Corymb
e. Catkin

903. Acetylsalicylic acid is used in treatment of rheumatism. What biochemical links are affected by acetylsalicylic acid?
a. Inhibits prostaglandines synthesis
b. Stimulates prostaglandines synthesis

c. Inhibits glycolysis
d. Stimulates gluconeogenesis
e. Stimulates cholesterol synthesis

904. Dietary fiber is a component of plant foods that plays an important role in prevention of gastrointestinal diseases. What polysaccharide is a primary component of plant cell walls?
a. Chondroitin sulfate
b. Cellulose
c. Chitin
d. Glycogen
e. Starch

905. Leaves of a Lamiaceae family plant are ovate, with a crenate margin, darker on the top than on the bottom, and have a characteristic lemon-like smell. These are the features of the following plant:
a. Leonurus cardiaca
b. Lamium album
c. Mentha piperita
d. Melissa officinalis
e. Salvia officinalis

906. The patient's diuresis decreased to 800 mL per 24 hours. Such change in urine output is called:
a. Proteinuria
b. Leukocyturia
c. Polyuria
d. Oliguria
e. Anuria

907. Molecular absorption analysis is based on the Beer–Lambert–Bouguer law. According to this law, optical density of a solution is:
a. Inversely proportional to the layer thickness and concentration of the substance
b. Directly proportional to the concentration and inversely proportional to the monochromatic light absorption index
c. Directly proportional to the concentration and inversely proportional to the layer thickness
d. Directly proportional to the layer thickness and monochromatic light absorption index
e. Directly proportional to the layer thickness and concentration of the substance

908. In Allium cepa, the main axis ends in an inflorescence, in which peduncles of the same length emerge from one point. What type of inflorescence is it characteristic of?
a. Spike
b. Flat capitulum
c. Raceme
d. Corymb
e. Umbel

909. What particles of the micelle described by the following formula: m(AgCl) nAg^+ (n-x) NO_3^-^x+ xNO_3^- are situated in diffusion layer?
a. NO_3^-
b. Ag^+ and NO_3^-
c. AgCl and Ag^+
d. AgCl
e. Ag^+

910. A 48-year-old patient has been intravenously administered prednisolone solution to arrest severe attack of bronchial asthma. What group of hormonal agents does prednisolone belong to?
a. Gestagenic drugs
b. Anabolic steroids
c. Mineralocorticoid
d. Glucocorticoids
e. Estrogenic drugs

911. To determine causative agent of the disease, a Gram-stained smear was prepared from the material obtained from the patient with furunculosis. Staphylococci were detected in the smear. What microscopic presentation allows making this conclusion?

a. Gram-negative cocci in grape-like clusters
b. Gram-positive cocci in grape-like clusters
c. Gram-negative cocci in short chains
d. Gram-negative bacilli in short chains
e. Gram-positive cocci in short chains

912. A tumor of the adenohypophysis disturbs the synthesis of tropic hormones and causes acromegaly. What hormone would exhibit elevated levels in this case?

a. Luteinizing
b. Oxytocin
c. Follicle-stimulating
d. Vasopressin
e. Somatotropin

913. Emulsions are thermodynamically unstable. In them, the droplets of dispersed phase merge together spontaneously, causing the emulsion to stratify. Name this phenomenon:

a. Deformation
b. Coalescence
c. Solubilization
d. Contraction
e. Wetting

914. During examination a woman presents with enlarged thyroid gland, exophthalmos, increased basal metabolism and heat production, tachycardia, tearfulness, and nervousness. This clinical presentation is characteristic of the following disease:

a. Hypothyroidism
b. Diabetes mellitus
c. Thyrotoxicosis
d. Addison's disease
e. Cushing's disease

915. Pterin derivatives are used as antitumor agents, because they are the equivalents of the coenzyme required for the synthesis of thiamine monophosphate. This coenzyme is the active form of the following vitamin:

a. Ascorbic acid
b. Lipoic acid
c. Folic acid
d. Riboflavin
e. Thiamine

916. Which phenomenon is uncharacteristic of aerosols?

a. Photophoresis
b. Thermoprecipitation
c. Dissociation
d. Thermophoresis
e. Coagulation

917. What method is used for quantification of magnesium sulfate solution for injections?

a. Iodine monochloride titration
b. Cerimetry
c. Nitritometry
d. Acid-base titration
e. Complexonometry

918. A patient with essential hypertension has elevated plasma renin levels. What pharmacological group of medicines is preferable in the treatment of this patient?

a. ACE inhibitors
b. Diuretics
c. Sympatholytics
d. Calcium ion antagonists
e. Alpha-blockers

919. Staphylococci grow well on common nutrient media. However, when isolating pure cultures from patients, blood agar and yolk-salt agar are used for inoculation. What is the purpose of using these nutrient media?
a. To determine the mobility of the bacteria
b. To determine the pathogenicity factors
c. To determine the tinctorial properties
d. To study the antigenic properties
e. To measure the sensitivity to antibiotics

920. Hydrochloric acid was added into the solution under investigation. The resulting precipitate was filtered, then this filter cake was processed with hot water; after the filtrate cooled, KI solution was added into it. What cation was present in the solution, if the precipitate was colored yellow?
a. Ca^2+
b. Ba^2+
c. Pb^2+
d. Ag^+
e. Hg^2+

921. What method is used to destroy an emulsion?
a. Condensation
b. Emulsification
c. Centrifugation
d. Homogenization
e. Dispersion

922. During invasive surgery with muscle relaxant applied a patient developed breathing disruption that was normalised by administering proserin. How can this drug interaction be described?
a. Incompatibility
b. Tachyphylaxis
c. Synergism
d. Cumulation
e. Antagonism

923. In the qualitative analysis which involves precipitation of sulphates of the third analytical group cations (Ca^2+, Sr^2+, Ba^2+) the solubility of sulphates can be reduced by adding:
a. Amyl alcohol
b. Distilled water
c. Benzene
d. Chloroform
e. Ethyl alcohol

924. Calculation of thermal effects of chemical reactions at a pharmaceutical factory is based on the Hess law stating that reaction thermal effect is determined by:
a. Process duration
b. Route by which the chemical change occurs
c. Mechanism by which the chemical change occurs
d. Initial and final state of system
e. Number of intermediate stages

925. A chemical analytical laboratory uses a reaction with dimethylglyoxime to identify nickel cations. What will be the color of the precipitate that forms as a result of this reaction?
a. Red
b. Green

c. Yellow
d. Blue
e. White

926. Choose the weakest carboxylic acid basing on its pKa value:
a. Acetic acid (pKa = 4.7)
b. Propionic acid (pKa = 4.9)
c. Formic acid (pKa = 3.7)
d. Butyric acid (pKa = 4.82)
e. Lactic acid (pKa = 3.9)

927. Tissue respiration is accompanied by formation of carbon dioxide and water. What component of the mitochondrial respiratory chain ensures the reduction of oxygen and formation of water?
a. Cytochrome oxidase
b. Ubiquinone
c. Cytochrome C
d. Acylcarnitine transferase
e. ATP / ADP translocase

928. A woman with chronic heart failure developed an edematous syndrome. Increased aldosterone levels were detected in her blood. What drug must be prescribed in this case?
a. Aceclidine
b. Proserine (Neostigmine)
c. Metoprolol
d. Ketamine
e. Spironolactone

929. To quickly relieve the state of acute psychosis, the patient was prescribed a rapid/short-acting psychotropic drug. Name this drug:
a. Amitriptyline
b. Caffeine and sodium benzoate
c. Piracetam
d. Valerian extract
e. Droperidol

930. A student was asked, what additional functions of the root are associated with the accumulation of nutrients. These functions are:
a. Primary synthesis of organic substances
b. Formation of storage roots and root tubers
c. Maintaining the spatial position of a plant
d. Respiration
e. Symbiosis of the root and algae

931. Every year in autumn a coniferous tree from the Gymnospermae subdivision undergoes defoliation of its soft needles situated on short shoots. It is characteristic of the following genus:
a. Cedrus
b. Larix
c. Abies
d. Pinus
e. Picea

932. A patient developed a keloid scar at the site of skin inflammation. This condition is associated with an abnormal course of a certain stage of inflammation. Name this stage.
a. Exudation
b. Progression
c. Primary alteration
d. Secondary alteration
e. Proliferation

933. How according to the Pharmacopoeia is pH determined?
a. Indicator
b. Potentiometry
c. Polarography
d. Spectrophotometry
e. Conductometry

934. If the amount of a high molecular substance added into a sol is very small, then a decrease in its stability, instead of an increase, can occur. What is the name of this phenomenon?
a. Solubilization
b. Synergism
c. Sensitization
d. Syneresis
e. Sedimentation

935. A food plant of Polygonaceae family is being studied. The plant has reddish stalk, cordate-sagittate leaves, its fruit is a trihedral nutlet. Name this plant:
a. Persicaria bistorta
b. Polygonum aviculare
c. Rumex confertus
d. Persicaria hydropiper
e. Fagopyrum esculentum

936. Mantoux skin test is used to screen school children for infection with Mycobacterium tuberculosis. What testing agent is necessary for this procedure?
a. Anthraxinum
b. Anti-anthrax vaccine (STI)
c. Tuberculin
d. Brucellin
e. BCG vaccine

937. In medicine, various dosage forms are used: emulsions, foams, powders, etc. that can be classified as disperse systems. What determines the dispersion in such systems?
a. The degree of the dispersed material comminution
b. The nature of the dispersed material
c. The volume of the continuous medium
d. The shape of the particles
e. The mass of the comminuted substance

938. What pharmacological effect of acetylsalicylic acid allows its application in patients with ischemic heart disease for prevention of thromboses?
a. Antipyretic
b. Anti-inflammatory
c. Analgesic
d. Antiaggregant
e. Ulcerogenic

939. What broad-spectrum antibiotic is contraindicated for children under 14 years of age because it disrupts the formation of the skeleton?
a. Doxycycline
b. Azithromycin
c. Ampicillin
d. Ceftriaxone
e. Acyclovir

940. A patient with acute cardiac infarction was undergoing anticoagulant therapy with inhibitor of antithrombin III that prevents intravascular blood clotting. Name the compound with anticoagulating effect:
a. Chondroitin sulfate

b. Heparin
c. Hyaluronic acid
d. Histamine
e. Tetracycline

941. Microscopy of plants detects parenchymal cells with thin membranes, a large nucleus, and a large number of ribosomes. What tissue is it?
a. Meristematic tissue
b. Parenchyma
c. Secretory tissue
d. Dermal tissue
e. Mechanical tissue

942. What substance is deposited in the proteoplasts of seed cells of higher plants in the form of crystals and simple and complex aleurone grains?
a. Starch
b. Protein
c. Inulin
d. Fatty oil
e. Glycogen

943. Microscopy of a vaginal discharge detects round and oval Gram-positive cells that gemmate and form a pseudomycelium. What medicines must be recommended for treatment, if the diagnosis of candidiasis is confirmed?
a. Clotrimazole, nystatin
b. Tetracycline, oleandomycin
c. Sulgin (sulfaguanidine), phthalazol (phthalylsulfathiazole)
d. Erythromycin, monomycin
e. Penicillin, streptomycin

944. The ornithine cycle is the main way of ammonia neutralization in the human body. What substance is the end product of ammonia neutralization?
a. Citrulline
b. Carbamoyl phosphate
c. Arginine
d. Urea
e. Uric acid

945. A patient with a small cut on the palm came to the dispensing chemist. What antiseptic would be advisable in this case?
a. Ketoconazole
b. Hydrogen peroxide
c. Flemoxin (Amoxicillin)
d. Lidocaine hydrochloride
e. Doxycycline hydrochloride

946. The leaves of a Lamiaceae family plant are ovate, with a pointed tip, crenate leaf edge, and a lemon scent, which is characteristic of the following plant:
a. Mentha piperita
b. Lamium album
c. Melissa officinalis
d. Salvia officinalis
e. Leonurus cardiaca

947. Integumentary tissue of roots consists of cells with thin cellulose mebranes and protuberances - root hairs. This tissue is:
a. Plerome
b. Periderm
c. Periblem

d. Phelloderm
e. Epiblema

948. After a casual sexual contact, a 30-year-old man visited a hospital complaining of a painless ulcer with smooth edges on the head of his penis. What pathogen has caused the patient's disease in this case?
a. Ureaplasma
b. Mycoplasma
c. Treponema
d. Neisseria
e. Chlamydia

949. The cells of Brassica oleracea leaves contain a certain vitamin that facilitates healing of gastric and duodenal ulcers. It is vitamin:
a. A
b. C
c. U
d. E
e. K

950. A plant has floating leaves with thick leathery cuticle, stratified columnar parenchyma, and spongy parenchyma with large intercellular spaces. Only the upper epidermis has stomata in it. This plant is a:
a. Xerophyte
b. Heliophyte
c. Mesophyte
d. Hydrophyte
e. Sciophyte

951. A 12-year-old boy is of short stature, but his mental development corresponds with that of his age group. What hormone deficiency is the most likely to cause this pathology?
a. Adrenaline
b. Vasopressin
c. Somatotropin
d. Insulin
e. Oxytocin

952. Medicinal plants infected by microorganisms cannot be used in pharmaceutical industry. Invasive properties of phytopathogenic micro-organisms are due to the following enzymes:
a. Hydrolytic
b. Transferase
c. Lyase
d. Isomerase
e. Oxidoreductase

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

954. After a traffic accident the driver presents with increased blood glucose. What mechanism leads to hyperglycemia in this case?
a. Sympathoadrenal system activation
b. Decreased tone of parasympathetic nervous system
c. Increased production of somatotropic hormone
d. Decreased production of glucagon
e. Decreased production of insulin

955. Dimethylethylamine belongs to:

a. Tertiary amines

b. -

c. Secondary amines

d. Primary amines

e. Quaternary ammonium salts

956. Name the process of spontaneous adhesion of drops in an emulsion to each other:

a. Coagulation

b. Flotation

c. Flocculation

d. Coalescence

e. Sedimentation

957. Bromatometric determination of streptocide (Sulfanilamide) is performed by means of direct titration with a standard solution of potassium bromate. What is used as an indicator in this method of titration?

a. Methyl orange

b. Phenolphthalein

c. Murexide

d. Eriochrome black T

e. Iron(III) thiocyanate

958. What type of proenzyme activation into its active enzyme form is often used in the process of activation of hydrolases in the gastrointestinal tract?

a. Transamination

b. Addition of a metal cation

c. Phosphorylation

d. Decarboxylation

e. Limited proteolysis

959. Which medicine of those listed below is the least active among the local anesthetics, poorly dissolves in water, and can be used for topical anesthesia in the form of ointments, pastes, and powders?

a. Novocaine (Procaine)

b. Lidocaine

c. Ropivacaine

d. Ultracaine (Articaine)

e. Anesthesin (Benzocaine)

960. After an acute myocardial infarction, the doctor recommended the patient to take acetylsalicylic acid in the dose of 80--100 mg for 3 months. The doctor expects this drug to have the following effect in this case:

a. Antiplatelet

b. Analgesic

c. Anti-inflammatory

d. Spasmolytic

e. Antipyretic

961. Lecithin of various origins, being a surfactant compound, is used in food industry as emulsifying agent. What group of biomolecules does it belong to?

a. Sulfolipid

b. Sterol esters

c. Phospholipids

d. Glycolipids

e. Triacylglycerols (triglycerides)

962. A case of hepatitis A was registered at a school. What drug should be used for specific prevention in the children, who were in a contact with the sick classmate?

a. Ribavirin
b. Immunoglobulin
c. Inactivated vaccine
d. Live vaccine
e. Interferon

963. What anions interfere with the determination of halide ions by means of the Volhard method, because they form a strong colorless complex with iron(III) ions?
a. MnO_4^-
b. SO_3^2-
c. NO_2^-
d. F^-
e. NO_3^-

964. A sample obtained from the wound of a patient with suspected gas anaerobic infection was inoculated on the Kitt-Tarozzi medium. Why must this medium be heated before the inoculation?
a. To dissolve salts
b. To remove oxygen
c. To sterilize the medium
d. To destroy microorganisms
e. To enrich the medium with carbon dioxide

965. 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. HCl
c. HClO_4
d. HNO_3
e. H_2SO_4

966. Due to a case of diphtheria in the kindergarten, all the children and personnel undergo examination for early detection of the disease and its carriers. What material must be taken for analysis?
a. Blood
b. Nasal swab
c. Pharyngeal swab
d. Pharyngeal and nasal swabs
e. Wound material

967. Phytopathogenic microorganisms can significantly affect the yield of medicinal plants by decreasing their biomass or content of active substances. A plant afflicted with phytopathogenic microorganisms can develop rot in the organs and tissues rich in water, which leads to discoloration and changes in taste and odor. What microorganisms are the most common cause of rot?
a. Mycoplasma and viroids
b. Viruses and bacteria
c. Mycoplasma and rickettsia
d. Viruses and rickettsia
e. Fungi and bacteria

968. The Embryophyta subkingdom (higher plants) includes mainly terrestrial organisms, represented by various life forms (grasses, shrubs, subshrubs, trees, etc.). What division of higher plants includes only shrubs and trees?
a. Lycopodiophyta
b. Pynophyta
c. Polypodiophyta
d. Magnoliophyta
e. Bryophyta

969. A man suffers from cholelithiasis. What medicine should he be prescribed for biliary colic relief?

a. Bisacodyl
b. Magnesium sulfate
c. Contrykal (Aprotinin)
d. Pancreatin
e. Almagel (Algeldrate + magnesium hydroxide)

970. Separation of substances in chromatography is based on the ability of solutes:
a. To distribute between two stationary phases
b. To distribute between the mobile and stationary phases
c. To precipitate
d. To distribute between two mobile phases
e. To dissolve

971. Fenofibrate belongs to the following pharmacological group:
a. Hypolipidemic drugs
b. Hypnotics
c. Antihypertensive drugs
d. Fibrinolysis inhibitors
e. Indirect-acting anticoagulants

972. Moisture content of thermally unstable preparations can be determined by:
a. Permanganatometry
b. Iodometry
c. Karl Fischer titration
d. Bromatometry
e. Nitritometry

973. Antiparkinsonian drugs are classified based on the mechanism of their action in the body. What drug is a dopamine precursor?
a. Cyclodol (Trihexyphenidyl)
b. Levodopa
c. Bromocriptine
d. Midantan (Amantadine)
e. Selegiline

974. Catabolism of body's own tissue proteins is intensified during such diseases as thyrotoxicosis and tuberculosis. This process is attended by a certain compound been intensively synthesized in liver and subsequently excreted with urine. Name this compound:
a. Nucleotides
b. Urea
c. Acetone bodies
d. Fatty acids
e. Glucose

975. A melliferous tree has heart-shaped leaves and dichasial cyme inflorescences with winged perianth. This plant is:
a. Aesculus hippocastanus
b. Aronia melanocarpa
c. Quercus robur
d. Tilia cordata
e. Robinia pseudoacacia

976. After parenteral administration of iron preparations, the patient presents with pain behind the sternum and redness of the face and neck. What drug should be administered in this case?
a. Vitamin A
b. Ascorbic acid
c. Folic acid
d. Deferoxamine
e. Cyanocobalamin

977. Name the plants that have adapted to growing in an arid environment and developed a number of mechanisms to reduce the moisture loss.

a. Mesophytes
b. Hydrophytes
c. Succulents
d. Hygrophytes
e. Xerophytes

978. Name the process of liquid droplets or gas (air) bubbles fusion that occurs when they collide inside a moving medium (liquid, gas), or on the surface of a body:

a. Aggregation
b. Electrophoresis
c. Coagulation
d. Coalescence
e. Sedimentation

979. What reagent allows distinguishing between maltose (a reducing disaccharide) and sucrose (a non-reducing disaccharide)?

a. Br_2
b. NaOH
c. K_4[Fe(CN_6)]
d. Tollens reagent
e. FeCl_3

980. What two working solutions are used in determination of hydrogen sulfide in mineral waters by means of iodometry (back titration)?

a. H_2C_2O_4, KMnO_4
b. Na_2CO_3, HCl
c. I_2, Na_2S_2O_3
d. NaOH, HCl
e. AgNO_3, H_2SO_4

981. What indicator is used in determination of primary aromatic amines using the nitritometric method?

a. Phenolphthalein
b. Methyl orange
c. Tropeolin 00
d. Potassium chromate
e. Eosin

982. A solution being analyzed contains ammonium and sodium cations. What reagent can detect sodium cations in this solution?

a. Uranyl zinc acetate
b. Potassium hydrotartrate
c. Potassium oxalate
d. Potassium tetraiodomercurate(II)
e. Potassium benzoate

983. A patient has been provisionally diagnosed with diabetes mellitus. What erythrocyte protein needs to be measured in this case to assess the glycemia levels in the patient?

a. Bence-Jones protein
b. C-reactive protein
c. gamma-globulin
d. Glycated hemoglobin
e. alpha_2-globulin

984. In the process of breathing oxygen joins with hemoglobin in lungs and makes up oxyhemoglobin as a result, which leads to release of protons from hemoglobin and production of carbonic acid. What enzyme catalyzes further transformation of carbonic acid into carbon dioxide that is exhaled from

lungs?
a. Heme oxygenase (haem oxygenase)
b. Carbonic anhydrase
c. Pyruvate kinase
d. Catalase
e. Lipase

985. A patient is diagnosed with acute pancreatitis. For diagnostic purpose it is necessary to measure the activity of the following enzyme in the patient's blood:
a. Aldolase
b. Amylase
c. Pepsin
d. LDH
e. Creatine kinase

986. Medical school graduates have received active immunization against hepatitis B, because doctors are at greater risk of contracting this disease. Name the main transmission route of this pathogen:
a. Waterborne transmission
b. Airborne droplet transmission
c. Contact transmission
d. Parenteral transmission
e. Alimentary transmission

987. On a fusiblity curve of a two-component system with simple eutectic we can observe the following above the liquidus line:
a. Both components are in liquid state
b. Both components are in gaseous state
c. Both components are in solid state
d. One component is liquid, another is solid
e. Each component is partially in different aggregate states

988. A patient suffers from hyperchromic B_12-deficiency anemia. What vitamin preparation should be prescribed in this case?
a. Cyanocobalamin
b. Retinol acetate
c. Vicasol (Menadione)
d. Riboflavin
e. Thiamine chloride

989. In gas-liquid chromatography the substances being analyzed are entered into the stream of a carrier gas. This gas must meet the following condition:
a. Inert to the stationary phase and the substances being analyzed
b. High thermal conductivity
c. Rate of movement through the column
d. High molecular weight
e. Affinity for the stationary phase

990. In a maternity hospital infants are vaccinated against tuberculosis on the 5-7 day. What vaccine is used specifically for prevention of tuberculosis?
a. STI vaccine
b. BCG vaccine
c. EV vaccine
d. TABTe vaccine
e. DPT vaccine

991. Exudation is an effect of inflammation-caused disruption of blood circulation. In the course of inflammatory process it starts at the following stage of vascular disorder:
a. Venous hyperemia

b. Stasis
c. Prestasis
d. Arterial hyperemia
e. Arterioles spasm

992. Althaea officinalis root assumes a marked blue hue on section when processed with methylene blue, which indicates the presence of:
a. Glycogen
b. Mucus
c. Starch
d. Lipids
e. Inulin

993. During a hypertensive crisis, magnesium sulfate was administered to the patient, resulting in a sharp decrease of blood pressure. What drug can be administered to eliminate the side effects of magnesium sulfate?
a. Calcium chloride
b. Potassium chloride
c. Sodium sulfate
d. Trilon B (disodium EDTA)
e. Sodium bromide

994. A patient with tuberculosis developed impaired hearing after a long-term treatment with an antibiotic. What drug had an ototoxic effect in this case?
a. Streptomycin
b. Abaktal (Pefloxacin)
c. Benzylpenicillin
d. Ceftriaxone
e. Ampicillin

995. The material obtained from a patient with suspected acute Salmonella-induced gastroenteritis was sent to a bacteriological laboratory. What should be used in this case for serological identification of the isolated pure bacterial culture?
a. Agglutinating diagnostic serum for salmonellosis
b. Live pure culture of Salmonella
c. Salmonellosis diagnosticum
d. Erythrocytic salmonellosis diagnosticum
e. Patient's blood serum

996. A laboratory has conducted a soil study to identify the causative agents of an anaerobic infection. Spore-forming is a characteristic feature of these bacteria. What staining technique can be used to detect spores?
a. Neisser stain
b. Morozov stain
c. Ozheshko stain
d. Burri-Gins stain
e. Romanowsky-Giemsa stain

997. Plants that grow in moderately humid conditions belong to the following ecological group:
a. Succulents
b. Hydrophytes
c. Mesophytes
d. Xerophytes
e. Hygrophytes

998. What is represented by such a pharmacokinetic value of a drug as its biological half-life (T1/2)?
a. Time period in which plasma drug concentration decreases by 50%
b. Blood plasma volume cleared of drug within a time unit
c. Period of total body clearance

d. Correlation between the drug clearance rate and plasma drug concentration
e. Renal clearance rate

999. What type of parenchyma usually has aleurone or starch grains and droplets of a fatty oil in its cells?
a. Spongy parenchyma
b. Folded parenchyma
c. Water-storing parenchyma
d. Columnar parenchyma
e. Storage parenchyma

1000. A 47-year-old patient with bilateral pneumonia has a disruption of acid-base balance - compensated gaseous acidosis. What is the most probable mechanism of compensatory adaptation that maintains the patient's acid-base balance?
a. Vomiting
b. Diarrhea
c. Decreased reabsorption of hydrogen carbonate in kidneys
d. Intensified acidogenesis in kidneys
e. Pulmonary hyperventilation

1001. Proserin is a reverse acetylcholinesterase inhibitor. What is the mechanism of inhibitory action of the drug?
a. Competition with acetylcholine for enzyme active center
b. Oxidation of iron ion in enzyme active center
c. Enzyme denaturation
d. Covalent bond outside of enzyme active center
e. Covalent bond with enzyme substrate

1002. Essential oils are used both in pharmaceutical and cosmetic industry. To extract essential oils from herbal raw material, the following technology is used:
a. Steam distillation
b. Conductometry
c. Potentiometry
d. Calorimetry
e. Colorimetry

1003. Microscopy of a plant stem revealed a complex tissue, consisting of sieve-like tubes with satellite cells, bast fibers, and bast parenchyma. Name this tissue:
a. Periderm
b. Phloem
c. Rhytidoma
d. Epidermis
e. Xylem

1004. How is the radial type of leaf blade different from the dorsiventral type?
a. It has stomata
b. It has a vascular bundle
c. It has trichomes
d. It has spongy parenchyma
e. It has hypodermis

1005. For a humoral immune response to form, a number of cells of the immune system must interact with the antigen. What cells are the first to encounter the antigen?
a. B lymphocytes
b. Suppressor T cells
c. NK cells
d. Helper T cells
e. Macrophages

1006. A 55-year-old patient was diagnosed with angina pectoris. A calcium channels blocking agent was prescribed for the treatment. Name this drug:

a. Labetalol
b. Reserpine
c. Amlodipine
d. Octadinum (Guanethidine)
e. Atenolol

1007. According to the Smoluchowski theory of rapid coagulation, the coagulation process can be described using the following type of kinetic equation:

a. Third-order equation
b. Second-order equation
c. First-order equation
d. Fractional-order equation
e. Zero-order equation

1008. What type of conducting bundle is characteristic of primary anatomical structure of a root?

a. Closed collateral
b. Bicollateral
c. Open collateral
d. Radial
e. Concentric

1009. Short lignified stem is characteristic of the Allium cepa genera. It is a part of modified sprout that is called:

a. Phylloclade
b. Bulb
c. Tuber
d. Rhizome
e. Tendril

1010. In medical and pharmaceutical practice the phenomena of adsorption, wetting, and adhesion are regularly observed. Name this group of phenomena:

a. Molecular-kinetic phenomena
b. Surface phenomena
c. Physico-chemical phenomena
d. Electrokinetic phenomena
e. Optical phenomena

1011. At what temperature should the determination be carried out in refractometric method of analysis?

a. 28^oC
b. 20^oC
c. 23^oC
d. 25^oC
e. 18^oC

1012. A 23-year-old man came to the infectious diseases department with complaints of abdominal distension and diarrhea. He was diagnosed with lambliasis. What type of leukocytosis is characteristic of this disease?

a. Lymphocytic
b. Monocytic
c. Neutrophilic
d. Eosinophilic
e. Basophilic

1013. A doctor has prescribed metoprolol to a person with essential hypertension. As a result of abrupt cessation of treatment, the patient's blood pressure increased. What pathological condition did the patient develop?

a. Pharmacotoxic response
b. Idiosyncrasy
c. Allergic reaction
d. Drug allergy
e. Withdrawal syndrome

1014. What diuretic reduces excretion of uric acid?
a. Furosemide
b. Acetazolamide
c. Verospiron (Spironolactone)
d. Hydrochlorothiazide
e. Mannitol

1015. A patient came to the pharmacy to obtain a drug that contains pancreatic enzymes and can be taked for chronic pancreatitis. What drug would be recommended by the dispensing chemist?
a. Omeprazole
b. Triamcinolone
c. Pancreatine
d. Gordox (Aprotinin)
e. Pirenzepine

1016. Against the background of treatment with antihypertensive drugs, a woman developed a dry cough. What drugs have caused this side effect?
a. Ganglioblockers
b. Diuretics
c. Calcium channel blockers
d. alpha-blockers
e. ACE inhibitors

1017. A pregnant woman was administered fenoterol to reduce the uterine tone for the correction of her labor activity. What is the mechanism of the uterolytic effect of this drug?
a. Blocking beta_2-adrenoceptors of the uterus
b. Direct antispasmodic effect
c. Stimulation of alpha_1-adrenoceptors of the uterus
d. Stimulation of beta_2-adrenoceptors of the uterus
e. Stimulation of beta_2- and alpha_1-adrenoceptors of the uterus

1018. In pharmaceutical technology, analysis of the phase diagram of systems is of practical importance. What type of equilibrium is characterized by the figurative point on the phase diagram of water?
a. Two-component, one-phase, one-variant
b. Two-component, two-phase, one-variant
c. One-component, one-phase, non-variant
d. One-component, two-phase, non-variant
e. One-component, three-phase, non-variant

1019. What type of solutions can be used as infusion solutions?
a. Ideal
b. Hypertonic
c. Isotonic
d. Hypotonic
e. Colloid

1020. A patient with peptic ulcer of duodenum was taking a histamine H_2-receptor antagonist. What drug of those given below belongs to this group?
a. Omeprazole
b. Allochol
c. Almagel (algeldrate + magnesium hydroxide)
d. Gastrozepin (Pirenzepine)

e. Famotidine

1021. Emulsions, ointments, pastes, etc., can be made by comminuting solids and liquids in a suitable medium. This process is called:

a. Coagulation
b. Adhesion
c. Condensation
d. Sedimentation
e. Dispersion

1022. A woman suffering from neurosis has disturbed sleep. What drug is optimal for insomnia treatment?

a. Nitrazepam
b. Aethaminalum-natrium (Pentobarbital)
c. Phenobarbital
d. Valerian tincture
e. Bromisoval

1023. During examination of a patient the otolaryngologist noted that the patient's tonsils are extremely swollen, hyperemic, and have gray coating. Microscopy of the coating sample detects there gram-positive bacilli arranged at an angle to each other. What disease can be suspected?

a. Mumps
b. Tonsillitis
c. Scarlet fever
d. Meningococcal nasopharyngitis
e. Diphtheria

1024. What substances given below are not surfactants?

a. Aldehydes and alcohols
b. Carboxylic acids and soaps
c. Alcohols and soaps
d. Inorganic acids, bases, and their salts
e. Amines and sulfonic acids

1025. Koch's bacillus was detected in the sputum of the patient with pulmonary tuberculosis. In this patient tuberculosis bacillus assumes the following role:

a. Causative agent of the disease
b. Risk factor of the disease
c. Condition conducive to the disease development
d. Condition hampering the disease development
e. Disease development condition

1026. How many atoms does a furanose cycle consist of?

a. 6
b. 3
c. 7
d. 5
e. 4

1027. Chromatographic methods can be classified by the mechanism of the separation process. What type of chromatography includes the gas-liquid chromatographic method?

a. Affinity chromatography
b. Distribution chromatography
c. Adsorption chromatography
d. Gel chromatography
e. Ion exchange chromatography

1028. What Brassicaceae family plant has a cardiotonic effect?

a. Adonis vernalis

b. Erysimum diffusum
c. Capsella bursa-pastoris
d. Rheum tanguticum
e. Leonurus cardiaca

1029. What product is formed during the Wagner reaction, when alkenes are being oxidired with potassium permanganate in an aqueous medium?
a. Glycol
b. Epoxide
c. Ketone
d. Aldehyde
e. Carboxylic acid

1030. A 3.5-year-old child has been diagnosed with dysbacteriosis in the form of critical reduction of gram-positive anaerobic bacteria and increased number of staphylococci and yeast fungi. What preparation should be used for the correction of dysbacteriosis?
a. Colibacterin
b. Furazolidone
c. Lactoglobulin
d. Bifidumbacterin
e. Coli-Proteus bacteriophage

1031. What pathologies facilitate cumulation of drugs?
a. Diseases of connective tissue
b. Diseases of liver and kidneys
c. Diseases of CNS
d. Diseases of respiratory tracts
e. Diseases of locomotor apparatus

1032. What antidote must be used in case of narcotic analgesics overdose?
a. Naloxone
b. Unithiol (Dimercaptopropansulfonate sodium)
c. Diazepam
d. Calcium chloride
e. Caffeine and sodium benzoate

1033. Antidepressants can increase the content of catecholamines in the synaptic cleft. What is the mechanism of action of these drugs?
a. Inhibit aminotransferase
b. Activate decarboxylase
c. Inhibit xanthine oxidase
d. Activate aminotransferase
e. Inhibit monoamine oxidase

1034. A patient has acute pancreatitis. What is the leading link in the pathogenesis of this disease?
a. Disturbed trophism of exocrine pancreatocytes
b. Autoallergy
c. Arterial hypertension
d. Atherosclerosis of pancreatic vessels
e. Early activation of trypsin and elastase

1035. A 25-year-old man has an appointment with the dentist. Several minutes after his oral cavity was lavaged with furacilin (nitrofurazone) the patient developed significant labial edema. What type of allergic reaction is observed in this case?
a. Immune complex
b. Stimulated
c. Cytolytic
d. Delayed-type hypersensitivity
e. Anaphylactic

1036. Gelatin expands the most in the following solvent:
a. Acetic acid solution
b. Benzene
c. Ethanol
d. Diethyl ether
e. Water

1037. A specimen of Rosa majalis fruit was added to the morphological collection. This fruit consists of nutlets embedded in a matrix of fine stiff hairs on the inner surface of the succulent hypanthium. Name this fruit:
a. Hesperidium
b. Coenobium
c. Pepo
d. Cynarrhodium
e. Cremocarp

1038. A fruit is a capsule with oblate light brown smooth glossy seeds that mucify when moistened. This fruit belongs to:
a. Hypericum perforatum
b. Linum usitatissimum
c. Ledum palustre
d. Digitalis purpurea
e. Linaria vulgaris

1039. What substance is a unique accumulator, donor, and transformer of energy within the body?
a. Creatine phosphate
b. Adenosine triphosphate
c. Phosphoenolpyruvate
d. Succinyl-CoA
e. Acetyl-CoA

1040. What titrimetric method of analysis is used for the quantification of calcium chloride?
a. Permanganatometry, back titration
b. Permanganatometry, direct titration
c. Nitritometry, direct titration
d. Cerimetry, direct titration
e. Acidimetry, back titration

1041. Serum total protein is one of metabolic indicators. What reaction is usually used in clinical laboratories to measure this value?
a. Biuret
b. Xanthoproteic
c. Fohl
d. Nitroprusside
e. Ninhydrin

1042. How does the value of the critical micelle concentration in homologous series change with an increase in the molecular mass of the surfactant?
a. Sharply increases
b. Decreases
c. Remains unchanged
d. Reaches its maximum and then decreases
e. Increases

1043. What method is used for the quantification of ammonia?
a. Acidimetry, back titration
b. Alkalimetry, back titration
c. Alkalimetry, direct titration
d. Complexonometry

e. Acidimetry, direct titration

1044. A 70-year-old man with atherosclerosis complains of tinnitus both in the ears and in the head, memory deterioration, loss of working ability, and rapid fatigability. What arteries are the most affected in this man?

a. Coronary arteries
b. Renal arteries
c. Lower limb arteries
d. Cerebral arteries
e. Intestinal arteries

1045. In a patient with jaundice, increased levels of direct bilirubin and cholemia were detected in the blood. No stercobilinogen was detected in urine. What disorder is observed in this case?

a. Hemolytic jaundice
b. Mechanical jaundice
c. Parenchymal jaundice
d. Crigler-Najjar syndrome
e. Gilbert's syndrome

1046. In what taxonomic division is the gametophyte predominant over the sporophyte during the plant's life cycle?

a. Polypodiophyta
b. Lycopodiophyta
c. Bryophyta
d. Magnoliophyta
e. Pynophyta

1047. Examination of the sputum of a patient with suspected pneumonia detects blue-violet lanceolate cocci with a capsule, arranged in pairs. What staining method has been used to detect the capsule?

a. Neisser stain
b. Gram stain
c. Ziehl-Neelsen stain
d. Ozheshko stain
e. Burri-Gins stain

1048. What is the mechanism of action of the antiviral drug acyclovir?

a. Inhibition of nucleic acid synthesis
b. Inhibition of protein synthesis
c. Increase of cellular membrane permeability
d. Antagonism with para-aminobenzoic acid
e. Blockade of cellular wall synthesis

1049. Among NSAIDs, the least damaging effect on the gastrointestinal mucosa is characteristic of:

a. Naproxen
b. Celecoxib
c. Butadion (Phenylbutazone)
d. Acetylsalicylic acid
e. Diclofenac

1050. What component of a plant cell determines the water content in the plant's internal environment, regulates water-salt metabolism, maintains turgor, and accumulates substances?

a. Chloroplasts
b. Mitochondria
c. Golgi complex
d. Vacuoles
e. Endoplasmic reticulum

1051. For the specific prevention of influenza, the employees of an enterprise were vaccinated with

"Influvac". What type of immunity will develop in the body of the vaccinated?
a. Natural active
b. Innate congenital
c. Artificial active
d. Natural passive
e. Artificial passive

1052. What medicine increases the risk of toxic effects when taken along with gentamicin?
a. Erythromycin
b. Penicillin
c. Furosemide
d. Methylprednisolone
e. Caffeine

1053. A patient with gout was prescribed allopurinol - a competitive inhibitor of xanthine oxidase. Xanthine oxidase is a terminal enzyme of catabolism of:
a. Heteropolysaccharides
b. Purine nucleotides
c. Higher fatty acids
d. Phospholipids
e. Glycoproteins

1054. A patient with hypertension has been prescribed a drug that blocks angiotensin receptors. Specify this drug:
a. Losartan
b. Nifedipine
c. Apressin
d. Prazosin
e. Captopril

1055. What organelles in a plant cell accumulate reserve and ergastic substances and water, maintain osmotic pressure and turgor of the cell, contain cell sap, and are separated from the cytoplasm by a tonoplast?
a. Chloroplasts
b. Vacuoles
c. Mitochondria
d. Ribosomes
e. Lysosomes

1056. In the dentist's office, a patient developed asphyxia caused by aspiration of a small instrument. What type of respiratory failure is observed in this case?
a. Perfusion
b. Diffusion
c. Restrictive
d. Dysregulatory
e. Obstructive

1057. Examination of the lower limbs of a 40-year-old patient with coronary artery disease and vascular disease of the lower limbs (obliterating endarteritis) revealed skin pallor and dystrophy, local temperature decrease, sense shock, pain. The patient is likely to have the following disorder of the peripheral blood circulation:
a. Angiospastic ischemia
b. Venous hyperaemia
c. Obstruction ischemia
d. Arterial hyperaemia
e. Compression ischemia

1058. What indicator should be chosen for standardization of a hydrochloric acid solution using Na_2CO_3 and Na_2B_4O_7 solutions?

a. Methyl red
b. Murexide
c. Eosin
d. Tropeolin 00
e. Thymol blue

1059. Which one of the listed ions has the greatest mobility?
a. Cl^-
b. H_3O^+
c. CN^-
d. K^+
e. Na^+

1060. A 55-year-old man suffers from peptic ulcer disease of the stomach. What can be identified as an aggressive factor in this case?
a. Helicobacter pylory
b. Intestinal mucosal barrier
c. Adequate blood supply to the gastric mucosa
d. Prostaglandin E
e. Regeneration of the gastric mucosal epithelium

1061. When smeared with turpentine, the rabbit's tongue turns red and its blood supply increases. What type of arterial hyperemia occurs in this case?
a. Metabolic hyperemia
b. Work hyperemia
c. Neurotonic hyperemia
d. Reactive hyperemia
e. Neuroparalytic hyperemia

1062. The mixture being studied contains Mg^2+, Ni^2+, Hg^2+ cations. What reagent allows to detect Ni^2+ cations in the mixtire?
a. Ammonia solution
b. Alizarin
c. 1-Nitroso-2-naphthol
d. Dimethylglyoxime
e. Magneson I (Azo violet)

1063. Gout develops when purine nucleotide metabolism is disturbed. The doctor prescribed the patient allopurinol that is a competitive inhibitor of:
a. Xanthine oxidase
b. Hexokinase
c. Succinate dehydrogenase
d. Lactate dehydrogenase
e. Alcohol dehydrogenase

1064. Alkaptonuria is caused by a hereditary disorder of the metabolism of a certain amino acid. Name this amino acid.
a. Alanine
b. Tryptophan
c. Tyrosine
d. Arginine
e. Phenol

1065. What drug has an anxiolytic and anticonvulsant effect?
a. Aminazine (Chlorpromazine)
b. Droperidol
c. Diazepam
d. Phenobarbital
e. Reserpine

1066. Symptoms of cardiac failure are detected during examination of a female patient. Specify the possible cause of myocardial failure among those named below:

a. Coarctation of aorta
b. Primary hypertension
c. Infectious myocarditis
d. Mitral stenosis
e. Pulmonary emphysema

1067. To quickly stop an attack of angina pectoris, a 55-year-old patient was prescribed an organic nitrate drug. What drug is it?

a. Prazosin
b. Octadine (Guanethidine)
c. Nifedipine
d. Labetalol
e. Nitroglycerin

1068. IgM to rubella virus were detected in the blood serum of a sick child. What stage of the disease progression is indicated by this sign?

a. Acute
b. Post-vaccination
c. Persistent
d. Chronic
e. Incubation

1069. A pharmacy has decided to use a biological method for quality control of instrument sterilization in an autoclave. What microorganisms optimally should be used for this purpose?

a. Bacillus subtilis
b. Streptococcus pyogenes
c. Salmonella typhi
d. Borrelia recurrentis
e. Yersinia pestis

1070. Because of suberization, the cell membranes do not become moistened with water, are impermeable to water and gases, and are resistant to decay. What tissue can contain suberized cells?

a. Phloem
b. Cambium
c. Epidermis
d. Periderm
e. Phelloderm

1071. Corn stalks typically have adventitious roots in their lower parts. These roots combine the functions of:

a. Assimilation and absorption
b. Nutrition and support
c. Respiration and assimilation
d. Nutrition and respiration
e. Retraction or contraction

1072. A female patient was prescribed loratadine to treat her allergic dermatitis caused by bee sting. What is the mechanism of the drug's antiallergic action?

a. Block of leukotriene D4 receptors
b. Decrease of leukotriene release
c. Inhibition of histamine H2 receptors
d. Inhibition of histamine H1 receptors
e. Antiserotonin activity

1073. Having prepared a nutrient medium with carbohydrate solutions, the laboratory assistant sterilized it. What sterilization method was used?

a. Dry heat

b. Ultraviolet irradiation
c. Fractional, using flowing steam
d. One-time boiling
e. Steam under pressure

1074. Sullfur sol was obtained by adding 5 mL of a solution of sulfur in alcohol into 20 mL of distilled water. The sol was obtained by the following method:
a. Chemical condensation
b. Hydrolysis reaction
c. Double exchange reaction
d. Reduction reaction
e. Solvent substitution

1075. What standard solution can be used to standardize the solution of I_2?
a. Sodium nitrite solution
b. Potassium dichromate solution
c. Potassium permanganate solution
d. Potassium iodide solution
e. Sodium thiosulfate solution

1076. A patient with chronic constipation has been prescribed bisacodyl. After 3 weeks of treatment, the patient noticed a reduction of laxative effect. This is caused by the development of the following side-effect:
a. Dependence
b. Sensibilization
c. Dysbacteriosis
d. Habituation
e. Cumulation

1077. In the process of manufacturing live vaccines, the biofactories dry the bacteria and viruses in vacuum at low temperatures, to ensure stability and long shelf-life of the vaccines. Name this method:
a. Sterilization
b. Photoreactivation
c. Lyophilization
d. Tyndalization
e. Sublimation

1078. During what process does the entropy of a system decrease?
a. Polymerization
b. Dissolution
c. Sublimation
d. Dissociation
e. Evaporation

1079. After eating early vegetables that had high nitrite levels, a child developed hemic hypoxia. It is caused by accumulation of the following substance:
a. Methemoglobin
b. Carbhemoglobin
c. Carboxyhemoglobin
d. Deoxyhemoglobin
e. Oxyhemoglobin

1080. Photometry is one of the most common instrumental methods of analysis. It is based on the measurement of:
a. Fluorescence intensity
b. Optical density
c. Wavelength
d. Refractive index

e. Rotation angle

1081. The gradual aging of the body is accompanied by the slowing down of metabolic processes, the appearance of wrinkles, and the literal desiccation of a human body, associated with the cells in muscles and skin losing a certain ability that they have. Name this ability of the cells.

a. Cohesion
b. Moistening
c. Adhesion
d. Wetting
e. Swelling

1082. In the age of 5 months the child had measles antibodies in the blood. By the age of 1 year these antibodies disappeared from the child's blood. Why were these antibodies present in the child's blood?

a. Non-specific resistance
b. Acquired natural passive immunity
c. Innate immunity
d. Acquired natural active immunity
e. Artificial immunity

1083. A patient with peptic ulcer disease of the duodenum was taking a histamine H_2 receptor blocker. Which one of the listed drugs belongs to this group?

a. Mebeverine
b. Pirenzepine
c. Allochol
d. Famotidine
e. Omeprazole

1084. Dopplerography detected bilateral stenosis of renal arteries in a patient with the blood pressure of 180/100 mm Hg. Activation of what system is the most likely cause of the persistently elevated blood pressure in this case?

a. Sympathoadrenal system
b. Central nervous system
c. Kinin-kallikrein system
d. Renin-angiotensin-aldosterone system
e. Hypothalamic-pituitary-adrenal axis

1085. A patient has been prescribed drug with antibacterial effect on tuberculosis mycobacteria. What drug is used in tuberculosis treatment and is pyridoxine antivitamin?

a. Trimethoprim/sulfamethoxazole (Co-trimoxazole)
b. Isoniazid
c. Sulfanilamide
d. Streptomycin
e. Heparin

1086. A modern drug that inhibits the HMG-CoA reductase enzyme and reduces cholesterol synthesis was received by a pharmacy chain. Name this drug.

a. Furosemide
b. Atorvastatin
c. Lisinopril
d. Enalapril
e. Hydrochlorothiazide

1087. Polymerase chain reaction (PCR) is widely used in modern laboratory diagnostics. What can be detected using this reaction?

a. Antibodies to the microorganism
b. Antigen of the microorganism
c. Autoimmune disease
d. Allergy to the pathogen

e. Nucleic acid of the microorganism

1088. A 71-year-old woman with cholecystitis developed a yellow tint to her skin and mucosa. She was diagnosed with mechanical jaundice. The change in the patient's skin coloring occurred due to elevated levels of the following substance in her blood:

a. Bile acids

b. Conjugated bilirubin

c. Unconjugated bilirubin

d. Stercobilinogen

e. Urobilinogen

1089. Some medicines are colloidal solutions. Stabilizers are added to them to increase their aggregate stability. What substances are called stabilizers?

a. Substances that can increase the free energy of a system

b. Substances that can increase the interfacial tension

c. Substances that have no effect on the interfacial tension

d. Substances that can be adsorbed and reduce the interfacial tension

e. Substances that first increase the interfacial tension, and then reduce it over time

1090. Etiological factors of infectious diseases can be infectious agents with diverse ultrastructure. Which of the following groups does textbfNOT have cellular structure, protein synthesis, enzymatic and energy systems?

a. Protozoa

b. Fungi

c. Rickettsia

d. Bacteria

e. Viruses

1091. To enhance the solubility of the individual components of a number of liquid drug formulations, the colloidal surfactant are added. This process is based on the following physico-chemical phenomenon:

a. Diffusion

b. Extraction

c. Solubilization

d. Coagulation

e. Sedimentation

1092. A 65-year-old patient has been diagnosed with prostate adenoma. What adrenoblocker should he be prescribed?

a. Atenolol

b. Metoprolol

c. Doxazosin

d. Propranolol

e. Nifedipine

1093. The following is used to determine the titrant volume in the process of titrimetric analysis:

a. Measuring flasks

b. Burettes

c. Measuring tubes

d. Measuring glasses

e. Cylinders

1094. Long-term taking of sulfonamides has resulted in the patient developing anemia, leukopenia, and thrombocytopenia. What is the mechanism of development of these disorders?

a. Inhibition of hematopoiesis in the bone marrow

b. Intensified use of blood elements

c. These disorders have not been caused by the medicines

d. Bone marrow stimulation

e. Destruction of blood elements

1095. Trimerization of acetylene results in the following product:
a. 2-Butyne
b. Benzene (benzol)
c. Vinylacetylene
d. Trimethylbenzene
e. Cyclooctatetraene

1096. What antihistamine with marked sedative effect should be prescribed to be taken before bed?
a. Guttalax (Sodium picosulfate)
b. Fexofenadine
c. Loratadine
d. Aerius (Desloratadine)
e. Dimedrol (Diphenhydramin)

1097. What pair of electrodes is used in potentiometric redox titration?
a. Silver electrode and platinum electrode
b. Copper electrode and zinc electrode
c. Glass electrode and silver chloride electrode
d. Platinum electrode and silver chloride electrode
e. Silver sulfide electrode and silver chloride electrode

1098. Mycorrhiza on the oak roots is a symbiosis of:
a. Fungus and alga
b. Two different bacteria
c. Bacterium and higher plant
d. Fungus and higher plant
e. Fungus and bacterium

1099. Hormone-like substances from the group of eicosanoids can be used to stimulate labor activity during childbirth and as contraceptives. What substances have this effect?
a. Interleukins
b. Angiotensins
c. Enkephalins
d. Endorphins
e. Prostaglandins

1100. What product forms as a result of a reaction between aniline and benzaldehyde?
a. N,N-dimethylaniline
b. N-benzylideneaniline
c. Hemiacetal
d. Cyanohydrin
e. Oxime

1101. A patient was taken to a hospital with acute food poisoning caused by home-made canned mushrooms. The product analysis revealed some microorganisms that develop only in the absence of oxygen. What microorganisms caused the poisoning?
a. Facultative anaerobes
b. Microaerophiles
c. Obligate aerobes
d. Capnophiles
e. Obligate anaerobes

1102. For two weeks, a man has been taking tetracycline without a doctor's prescription for treatment of furunculosis. A yellowish color of the skin and sclera is observed in this man. When interviewing this person, a pharmacist determined that his condition developed after taking the medicines. What type of jaundice has developed in this case?
a. Hereditary
b. Cholestatic
c. Hepatic

d. Subhepatic
e. Hemolytic

1103. Introduction of immune preparation allows to form artificial acquired immunity. What preparation of those listed below is used to form artificial passive immunity?
a. DPT vaccine
b. Brucellosis vaccine
c. Choleragen-anatoxin
d. BCG vaccine
e. Antitetanus serum

1104. When herbal raw material of Calendula officinalis and Matricaria chamomilla is being harvested, inflorescences of the following type are being collected:
a. Capitulum
b. Anthodium
c. Umbel
d. Spike
e. Corymb

1105. Ion-exchange adsorption is widely used for water softening and demineralization. Through what ionite columns should the water be passed for its demineralization?
a. Through the anionite in the ROH-form, and then through the cationite in the R2Ca-form
b. Through the anionite in the R2SO4-form, and then through the cationite in the ROH-form
c. Through the cationite in the RK-form, and then through the anionite in the ROH-form
d. Through the cationite in the RH-form, and then through the cationite in the RK-form
e. Through the cationite in the RH-form, and then through the anionite in the ROH-form

1106. What titrimetric method of analysis requires the use of both external and internal indicators?
a. Alkalimetry
b. Permanganatometry
c. Nitritometry
d. Complexometric titration
e. Argentometry

1107. What physical phenomenon is measured using stalagmometry?
a. Concentration
b. Molecular mass
c. Surface tension
d. Isoelectric point
e. Osmotic pressure

1108. An analytical chemist conducts qualitative analysis of IV group cations. What reagent can be used to determine zinc?
a. Alizarin
b. Diphenylamine
c. Thiourea
d. Dithizone
e. Murexide

1109. A man with Trichomonas urethritis was prescribed an imidazole derivative for treatment. Name this drug:
a. Metronidazole
b. Ciprofloxacin
c. Furacilin (Nitrofural)
d. Azithromycin
e. Nitroxoline

1110. What group of diuretics completely rules out simultaneous prescription of hypotensive drugs that are ingibitors of angiotensin converting enzyme?

a. Potassium-sparing
b. Xanthine
c. Osmotic
d. Loop
e. Thiazide

1111. To introduce a medicine into the body through the airways, the following type of substance must be used:
a. Emulsion
b. Aerosol
c. Suspension
d. Ointment
e. Foam

1112. In the process of systematic analysis there is a need to separate PbSO_4 from mixture of the 3rd analytical group cation sulphates. Which of the following suits most towards this end?
a. Processing precipitate with acetate acid solution
b. Processing precipitate with concentrated sulfate acid
c. Processing precipitate with 30% ammonium acetate solution
d. Processing precipitate with ammonia solution
e. Precipitate recrystallization

1113. Examination of a 45-year-old man, who for a long time kept to a vegetarian plant-based diet, revealed him to have negative nitrogen balance. What peculiarity of his diet has caused such developments?
a. Insufficient fat content
b. Excessive water content
c. Insufficient vitamin content
d. Excessive carbohydrate content
e. Insufficient protein content

1114. A 32-year-old man with suspected alkaloid poisoning was brought into the admission room of an emergency hospital. What should be used for gastric lavage in this case?
a. Sodium chloride
b. Furacilin (Nitrofural)
c. Potassium permanganate
d. Unithiol (Dimercaptopropansulfonate)
e. Magnesium sulfate

1115. Enzymes are widely used as drugs in pharmacy. What is the main feature that separates enzymes from non-biological catalysts?
a. High universality
b. High homogeneity
c. Low universality
d. High dispersion
e. High specificity and selectivity

1116. What changes occur with the entropy of an isolated system, when it spontaneously approaches the equilibrium state?
a. Reaches its minimum
b. Does not change
c. Decreases linearly
d. Tends to infinity
e. Reaches its maximum

1117. A patient with neurosis suffers from fear and emotional tension. To relieve these symptoms a doctor prescribed the following drug:
a. Nootropil (Pyracetam)
b. Lithium carbonate

c. Sydnocarb (Mesocarb)
d. Caffeine
e. Diazepam

1118. During the study of home-made canned vegetables, microorganisms that resemble a tennis racket were inoculated on the Kitt-Tarozzi medium. What disease is likely to be caused by these pathogens?
a. Cholera
b. Escherichiosis
c. Botulism
d. Shigellosis
e. Salmonellosis

1119. What parameter determines the coagulating power of an electrolyte?
a. Sol volume
b. Charge of the coagulator ion
c. Sol dispersion degree
d. Electrolyte concentration
e. Sol density

1120. What vitamin supplement is typically prescribed along with folic acid in cases of hyperchromic anemia?
a. Retinol
b. Pyridoxine
c. Thiamine
d. Cyanocobalamin
e. Fercoven

1121. Jelly is one of the promising dosage forms. Name the process, when the initial structure of a mechanically destroyed jelly spontaneously restores:
a. Syneresis
b. Gelation
c. Thixotropy
d. Stratification
e. Diffusion

1122. A patient suffers from Down's disease that manifests as mental retardation, shortness of stature, pathologically short fingers and toes, and eyes with mongoloid slant. Karyotype analysis revealed trisomy 21. What group of diseases does this pathology belong to?
a. Chromosomal disorders
b. Molecular genetic disease
c. Blastopathy
d. Fetopathy
e. Gametopathy

1123. As a result of an accident (snakebite) a male patient has the following blood values: Hb- 80 g/l, RBC- 3,0cdot10^12/l; WBC- 5,5cdot10^9/l. What type of anemia is observed in this case?
a. Posthemorrhagic
b. Iron-deficiency
c. Aplastic
d. Hemolytic
e. Folic acid-deficiency

1124. A 10-year-old boy ate 0.5 kg of sweets, which exceeds his daily energy needs. As a result, the synthesis of a certain substance will activate in this child. Name this substance.
a. Lactose
b. Raffinose
c. Sucrose
d. Glycogen

e. Starch

1125. Presence of the pathogenic microorganisms in the air can be prognosticated according to the content of sanitary-indicative bacteria. Which bacteria indicate immediate epidemiologic danger?

a. Haemolytic streptococci
b. Sarcinae
c. Mold fungi
d. Micrococci
e. Yeast fungi

1126. "Protargol" and "collargol" colloidal silver preparations contain protein compounds besides their active substance. What is the function of proteins in these drugs?

a. Increased shelf life
b. Decreased side effects
c. Increased bactericidal effect of silver
d. Improved drug technology
e. Prevention of coagulation of the colloidal solution

1127. What titrant is used in bromatometric titration?

a. KBrO_3
b. Br_2
c. KBr
d. KBrO_4
e. KBrO_4 + KCl

1128. A 30-year-old patient has been hospitalized with complaints of increased body temperature, jaundice, and hemorrhagic rash on the skin and mucosa. A few days later, the patient developed acute renal failure. Microscopy of smears stained using the Romanowsky-Giemsa technique revealed twisting bacteria with secondary coils shaped like letters S and C) What bacteria are the most likely cause of the patient's disease?

a. Bordetella
b. Treponema
c. Salmonella
d. Leptospira
e. Borrelia

1129. Allopurinol is used to treat gout. What is the mechanism of action of this drug?

a. Competitive inhibitor of xanthine oxidase
b. Xanthine oxidase coenzyme
c. Activator of purine nucleotide catabolism
d. Xanthine oxidase activator
e. Inhibitor of purine nucleotide synthesis

1130. According to the Smoluchowski coagulation theory, the process of coagulation can be described with the kinetic equation of:

a. The first order
b. The zero order
c. The third order
d. The second order
e. The fraction order

1131. Which one of the listed drugs can be used to treat candidiasis?

a. Nystatin
b. Doxycycline
c. Azithromycin
d. Clindamycin
e. Ceftriaxone

1132. To prevent the development of muscular dystrophy, a doctor prescribed potassium orotate to a

patient. This compound is an intermediate product of the synthesis of a certain substance. What substance is it?

a. Ketone bodies
b. Cholesterol
c. Pyrimidine nucleotides
d. Bile acids
e. Glucose

1133. A potassium chromate solution was added into the solution being analyzed, which resulted in the formation of a yellow precipitate, soluble in acetic acid. What cations were present in the solution, as indicated by this qualitative reaction?

a. Magnesium cations
b. Potassium cations
c. Strontium cations
d. Ammonium cations
e. Sodium cations

1134. Ammonia is a toxic substance that is especially dangerous for the brain. In the human body, the main product of ammonia neutralization and excretion is urea. Name the process of urea synthesis.

a. Shemin-Rittenberg cycle
b. Cori cycle
c. Krebs ornithine cycle
d. Citric acid cycle
e. Linen cycle

1135. Aerosols are one of the dosage forms. Name the phenomenon when aerosol particles move in the direction of decreasing temperature.

a. Peptization
b. Photophoresis
c. Sedimentation
d. Thermophoresis
e. Electrophoresis

1136. Pastes are used in medicine to treat skin diseases. What type of disperse systems are they?

a. Emulsions
b. Powders
c. Foams
d. Suspensions
e. Aerosols

1137. Amino acids and their derivatives function as neurotransmitters in brain neurons. What neurotransmitter forms from an aromatic amino acid?

a. Methionine
b. Glycine
c. Taurine
d. Leucine
e. Dopamine

1138. A solution contains anions of organic acids. When a solution of iron(III) chloride was added, a pink-yellow precipitate formed. What anions are present in the solution?

a. Benzoate anions
b. Carbonate anions
c. Formate anions
d. Tetraborate anions
e. Oxalate anions

1139. Neutralization of drugs, particularly sulfonamides, in the liver occurs by means of acetylation. Name the compound that causes acetylation reaction:

a. Glutathione

b. Succinyl-CoA
c. S-adenosylmethionine
d. Acetyl-CoA
e. Glycine

1140. After a stroke the patient should be prescribed a drug that would increase energy transfer in the brain cells and stimulate the central nervous system. Name this drug:
a. Piracetam
b. Doxylamine
c. Phenazepam
d. Phenobarbital
e. Ketorolac

1141. Name the reactions and reagents that under certain conditions allow determination of certain ions in the presence of other ions:
a. General
b. Group
c. Selective
d. Characteristic
e. Specific

1142. Name the process, when the precipitate obtained as a result of coagulation transforms into a stable colloidal solution.
a. Heterocoagulation
b. Flocculation
c. Colloidal protection
d. Peptization
e. Micelle formation

1143. A patient who was receiving an indirect anticoagulant, warfarin, has taken acetylsalicylic acid to treat elevated body temperature. This combination of drugs is dangerous due to increased risk of:
a. Hemorrhage
b. Neurotoxicity
c. Osteoporosis
d. Dysbiosis
e. Cardiotoxicity

1144. To treat peptic ulcer disease of the stomach, the patient was prescribed an H_2-receptor antagonist under the brand name of Quamatel. What can be used as a substitute, if this brand is not available in the pharmacy?
a. Omeprazole
b. De-Nol (Bismuth subnitrate)
c. Pirenzepine
d. Famotidine
e. Pantoprazole

1145. What is the order of the kinetic equation that describes the process of coagulation according to the Smoluchowski theory of rapid coagulation?
a. Third order
b. Fractional order
c. Second order
d. Zero order
e. First order

1146. What cation of the V analytical group (acid-base classification) is present in the solution, if a black precipitate is produced when tin(II) chloride dissolved in an alkaline medium is added into this solution?
a. Iron(II)
b. Iron(III)

c. Antimony(III)
d. Bismuth(III)
e. Manganese(II)

1147. To treat atherosclerosis a patient has obtained hypolipidemic agent - Fenofibrate - from pharmacy. What is the pharmacological group of this drug?
a. Nitrofuranes
b. Fibrates
c. beta-adrenergic blocking agents
d. Muscarinic cholinergic receptor antagonists
e. Calcium channel blocking agents

1148. A pregnant woman develops leg edemas in the evening. In the morning, the edemas disappear. What pathogenetic factor contributes to the development of edema in this case?
a. Hyperglycemia
b. Decrease of oncotic blood pressure
c. Increase of hydrostatic blood pressure
d. Decrease of hydrostatic blood pressure
e. Increase of oncotic blood pressure

1149. Calcium carbonate crystals are deposited as clusters on the inner protrusions of a cell wall. What are these formations called?
a. Raphides
b. Styloids
c. Druses
d. Druses attached to cell membrane
e. Cystoliths

1150. The 55-year-old patient has been diagnosed with angina pectoris. Calcium channel-blocking agent was prescribed for treatment. Name this agent:
a. Atenolol
b. Amlodipine
c. Reserpine
d. Guanethidine
e. Labetalol

1151. Classification of anions is based on different solubility of their salts with Ba^2+ and Ag^+ ions. Anions of the 1st analytical group form salts poorly soluble in water with the following ions:
a. Ag^+ (ammonia buffer medium)
b. Ba^2+ (alkaline or neutral medium)
c. Ag^+ (alkaline medium)
d. Ag^+ (acid medium)
e. Ag^+ (neutral medium)

1152. Upon taking a herbal medicine, a 30-year-old patient has developed anaphylactic allergic reaction. Blood leukocytosis was observed. What kind of leukocytosis is characteristic of this case?
a. Eosinophilia
b. Monocytosis
c. Lymphocytosis
d. Basophilia
e. Heutrophilia

1153. A plant has lacticifers with milky sap and single flowers with deciduous calyx lobes; the fruit is a capsule. Determine the family of this plant based on these diagnostic characters:
a. Rosaceae
b. Fabaceae
c. Apiaceae
d. Papaveraceae
e. Compositae

1154. Smears prepared from the cerebrospinal fluid sediment and stained using the Gram technique are studied in diagnostics of meningitis. What finding confirms the diagnosis of meningococcal infection?

a. Gram-positive diplococci located inside leukocytes
b. Gram-negative diplococci located inside leukocytes and outside of them
c. Diplococci enclosed within a capsule
d. Gram-negative coccobacteria located inside leukocytes
e. Lancet-shaped Gram-positive diplococci

1155. What hormone changes glucose levels in the blood and is produced in the pancreas?

a. Growth hormone
b. Insulin
c. Somatostatin
d. Testosterone
e. Aldosterone

1156. The process of glycolysis starts with irreversible reaction of glucose transforming into glucose 6-phosphate. What enzyme catalyzes this reaction?

a. Catalase
b. Lipase
c. Creatine kinase
d. Aldolase
e. Hexokinase

1157. Tests for agglutination and lysis of the Leptospira bacteria are used in microbiological diagnostics of leptospirosis. How should these tests be evaluated?

a. With agglutinoscope
b. Against dark background
c. With unaided eye
d. With dark field method
e. With microscope set at low magnification

1158. A patient in the state of ketoacidotic coma presents with loud rapid respiration: labored expiration with tension of expiratory muscles occurs after deep inspiration. Name this type of pathologic respiration:

a. Cheyne-Stokes'
b. Gasping
c. Kussmaul's
d. Biot's
e. Stenotic

1159. A patient has thyrotoxicosis. What drug should be prescribed to this patient to suppress the synthesis of thyroid hormones?

a. Mercazolil (Thiamazole)
b. L-thyroxine
c. Antistrumin (Potassium iodide)
d. Thyroidin
e. Parathyroidin

1160. A patient in a state of psychosis was prescribed the following antipsychotic:

a. Diazepam
b. Phenobarbital
c. Cyclodol (Trihexyphenidyl)
d. Aminazine (Chlorpromazine)
e. Caffeine

1161. A person with a past history of acute myocardial infarction was recommended to take an antiaggregant that blocks platelet cyclooxygenase. What medicine can be classified as an antiaggregant?

a. Abciximab
b. Dipyridamole
c. Ticlopidine
d. Acetylsalicylic acid
e. Clopidogrel

1162. A patient presents with inflammation of the nasal mucosa: redness, edema, profuse mucus discharge from the nasal passages. This clinical presentation corresponds with the following stage of inflammation:
a. Biochemical
b. Alteration
c. Exudation
d. Proliferation
e. Immunologic

1163. One of the biological functions performed by glycoproteins in the body is a regulatory (hormone) function. What hormone is a glycoprotein based on its chemical nature?
a. Insulin
b. Glucagon
c. Thyrotropin
d. Aldosterone
e. Cortisol

1164. A factory that produces biopreparations adds a 0.3--0.4% formalin solution to a bacterial exotoxin. After that, in 3--4 weeks, a medicine is obtained. This medicine is used for specific disease prevention. What vaccines are made this way?
a. Live vaccines
b. Genetically engineered vaccines
c. Inactivated vaccines
d. Anatoxin vaccines
e. Chemical vaccines

1165. A diagnostic features of which family is the presence of giants or a flower tube?
a. Solanaceae
b. Heather
c. Celery
d. Rose
e. Beech trees

1166. It can be safely assumed that the infants born from the mothers with the history of measles will not be affected by the measles outbreak during their stay in the maternity ward. What classes of antibodies provide the infants with the resistance to this disease?
a. IgG
b. IgD
c. IgE
d. IgM
e. IgA

1167. What nutrient medium should be used by a laboratory technician to determine the total fungal count in a soft dosage form?
a. Meat peptone agar
b. Endo medium
c. Mannitol salt agar
d. Bismuth sulfite agar
e. Sabouraud agar

1168. During active muscle work, anaerobic glycolysis is the main source of energy, causing the accumulation of lactate in the muscles, the level of which gradually decreases. During what interorgan cycle does the utilization of lactate take place afterwards?

a. Urea cycle
b. Knoop-Lynen cycle
c. Pentose phosphate cycle
d. Krebs cycle
e. Cori cycle

1169. What drug is prescribed for prevention of myocardial infarction, if there are contraindications to acetylsalicylic acid?

a. Ticlopidine
b. Neodicoumarin (ethyl biscoumacetate)
c. Phenylin (Phenindione)
d. Heparin
e. Streptokinase