1. What should be used as an indicator electrode in potentiometric titration aimed at quantifying iron(II) sulfate?

a. Antimony

b. Platinum

c. Quinhydrone

d. Silver chloride

e. Glass

2. 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. Streptococci

d. Staphylococci

e. Peptostreptococci

3. What anions form a precipitate soluble in 12% ammonium carbonate solution as a result of their interaction with a silver(I) nitrate solution?

a. Iodide ions

b. Bromide ions

c. Thiocyanate ions

d. Sulfide ions

e. Chloride ions

4. 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. Verapamil

e. Amiodarone

5. 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 cultural properties

b. To obtain the pure culture

c. To study the biochemical properties

d. To study the antigenic properties

e. To obtain isolated colonies

6. Against the background of treatment with antihypertensive drugs, a woman developed a dry cough. What drugs have caused this side effect?

a. ACE inhibitors

b. alpha-blockers

c. Calcium channel blockers

d. Diuretics

e. Ganglioblockers

7. 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. Deferoxamine

b. Ascorbic acid

c. Cyanocobalamin

d. Folic acid

e. Vitamin A

8. Stone cells shaped like dumbbells or tubular bones were detected in begonia leaves. What type of

cells do they belong to?
a. Macrosclereids
b. Osteosclereids
c. Trichosclereids
d. Astrosclereids
e. Fibrosclereids

9. 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. Fibrinous
b. Serous
c. Croupous
d. Putrid
e. Purulent

10. During what process does the entropy of a system decrease?
a. Dissociation
b. Sublimation
c. Polymerization
d. Dissolution
e. Evaporation

11. 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. Ammonium cations
c. Potassium cations
d. Sodium cations
e. Strontium cations

12. 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. Ischemia
b. Thrombosis
c. Arterial hyperemia
d. Stasis
e. Venous hyperemia

13. 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. Blood
b. Respiratory
c. Digestive
d. Urinary
e. Nervous

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

15. What characteristic is used in titrimetric methods of analysis, when choosing the indicator?
a. Titration jump
b. Transition interval
c. Indicator constant
d. Neutralization point

e. Titration index

16. How is the radial type of leaf blade different from the dorsiventral type?

a. It has hypodermis

b. It has stomata

c. It has trichomes

d. It has a vascular bundle

e. It has spongy parenchyma

17. When determining substances by means of mercurimetric titration, the following solution is used as a titrant:

a. Ammonium thiocyanate

b. Potassium iodide

c. Silver(I) nitrate

d. Mercury(I) nitrate

e. Mercury(II) nitrate

18. 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. Coenobium

b. Hesperidium

c. Pepo

d. Cynarrhodium

e. Cremocarp

19. A patient developed candidiasis caused by long-term antibiotic treatment. What drug should be used in this case to eliminate candidiasis?

a. Nystatin

b. Fumagillin

c. Sulfadimezin (Sulfadimidine)

d. Rubomycin (Daunorubicin)

e. Interferon

20. 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. Isomerase

c. Peroxidase

d. Hydrolase

e. Catalase

21. 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. Conversion of ions to a lower degree of oxidation

d. Gas removal

e. Formation of colored compounds

22. 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. One-component, two-phase, non-variant

b. Two-component, one-phase, one-variant

c. One-component, one-phase, non-variant

d. Two-component, two-phase, one-variant

e. One-component, three-phase, non-variant

23. 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. Glycolysis
b. Glycogen mobilization
c. Citric acid cycle
d. Cholesterol synthesis
e. Urea synthesis

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

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

25. What type of conducting bundle is characteristic of primary anatomical structure of a root?

a. Radial
b. Open collateral
c. Bicollateral
d. Concentric
e. Closed collateral

26. 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. Prestasis
b. Venous hyperemia
c. Arterioles spasm
d. Stasis
e. Arterial hyperemia

27. What drug should be administered for individual prevention of malaria?

a. Gentamicin
b. Biseptol (Co-Trimoxazole)
c. Ampicillin
d. Chingamin
e. Rifampicin

28. 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

29. 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. DNA replication
b. Post-translational modification of peptides
c. RNA transcription
d. Protein biosynthesis
e. Post-transcriptional modification of RNA

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

a. Diclofenac sodium
b. Paracetamol
c. Celecoxib

d. Acetylsalicylic acid
e. Ibuprofen

31. 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_12
b. Vitamin K
c. Vitamin B_6
d. Vitamin A
e. Vitamin B_5

32. Under what condition is the solubilization process possible?
a. Surfactant concentration in the solution is arbitrary
b. Solute has high solubility in a certain solvent
c. Surfactant was comminuted before the dissolution
d. Surfactant is in the form of micelles
e. Surfactant is in the form of molecules

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

34. What ion has the maximum coagulating effect when added into positively charged sols?
a. PO_4^3-
b. Cl^-
c. Al^3+
d. SO_4^2-
e. K^+

35. 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. Tetradynamous
b. Monadelphous
c. Polydelphous
d. Didynamous
e. Diadelphous

36. 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. Staphylococci
c. Candida fungi
d. Streptococci
e. Meningococci

37. 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. Glycogen
b. Cholesterol
c. Glucose
d. Glycerine
e. Putrescine

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

39. 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. Right ventricular
b. Left ventricular
c. Combined
d. Compensated
e. Subcompensated

40. 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. Radiation sterilization (gamma-radiation)
b. Autoclaving
c. Tyndallization
d. Dry heat
e. Pasteurization

41. 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. Isocitric
b. Oxaloacetic
c. Malic
d. Fumaric
e. Citric

42. What two working solutions are used in determination of hydrogen sulfide in mineral waters by means of iodometry (back titration)?

a. Na_2CO_3, HCl
b. NaOH, HCl
c. H_2C_2O_4, KMnO_4
d. I_2, Na_2S_2O_3
e. AgNO_3, H_2SO_4

43. 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. Ammonium sulfate solution
b. Distilled water
c. Dilute solution of sulfuric acid
d. Sodium sulfate solution
e. Barium chloride solution

44. 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. Potassium-sparing
c. Sedative
d. Antispasmodic
e. Analgesic

45. 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. Streptococci
c. Salmonellae
d. Shigella
e. Gonococci

46. At what temperature should the determination be carried out in refractometric method of analysis?

a. 23^oC
b. 28^oC
c. 25^oC
d. 20^oC
e. 18^oC

47. 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. Ticlopidine
b. Dipyridamole
c. Abciximab
d. Acetylsalicylic acid
e. Clopidogrel

48. A patient with neurosis suffers from fear and emotional tension. To relieve these symptoms a doctor prescribed the following drug:

a. Nootropil (Pyracetam)
b. Sydnocarb (Mesocarb)
c. Diazepam
d. Lithium carbonate
e. Caffeine

49. What cation is present in the solution, if its heating with an alkali produces a gas with pungent odor?

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

50. 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. Pynophyta
b. Magnoliophyta
c. Polypodiophyta
d. Lycopodiophyta
e. Bryophyta

51. Serum total protein is one of metabolic indicators. What reaction is usually used in clinical laboratories to measure this value?

a. Biuret
b. Fohl
c. Xanthoproteic
d. Ninhydrin
e. Nitroprusside

52. Uric acid is the end product of purine nucleotide breakdown. Elevated levels of uric acid in blood lead to the development of:

a. Gout
b. Glycogenosis
c. Gastritis
d. Hepatitis
e. Diabetes mellitus

53. Which of the amines listed below is a primary amine?

a. C_6H_5CH_2NHCH_3
b. C_6H_5CH_2N(CH_3)_2
c. C_6H_5NHCH_3
d. C_6H_5N(CH_3)_2
e. C_6H_5CH_2NH_2

54. 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. Thyrotropin
b. Insulin
c. Cortisol
d. Glucagon
e. Aldosterone

55. 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. Obstruction ischemia
b. Compression ischemia
c. Venous hyperaemia
d. Angiospastic ischemia
e. Arterial hyperaemia

56. 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. Deficiency of unsaturated fatty acids
c. Alimentary protein deficiency
d. Excess fats and carbohydrates
e. Excess protein in the diet

57. Some medicinal plants are poisonous. Select a poisonous plant from the list below:

a. Digitalis purpurea
b. Thymus vulgaris
c. Salvia officinalis
d. Thymus serpilum
e. Origaum vulgare

58. The pharmacological effect of some antidepressants is associated with detoxification of biogenic amines in the brain. What enzyme inactivates biogenic amines?

a. Transaminase
b. Deaminase
c. Decarboxylase
d. Monoamine oxidase
e. Lactate dehydrogenase

59. 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. Neurotoxicity

b. Osteoporosis
c. Hemorrhage
d. Cardiotoxicity
e. Dysbiosis

60. 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. Bismuth sulfite agar
c. Sabouraud agar
d. Mannitol salt agar
e. Endo medium

61. Disperse systems compose a large part of all dosage forms. Point out the bound disperse system:
a. Lyosol
b. Gel
c. Suspension
d. Emulsion
e. Aerosol

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

63. 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. Summation
b. Material cumulation
c. Tolerance
d. Functional cumulation
e. Antagonism

64. In the course of bronchitis pharmacotherapy a patient has developed dyspeptic disorders, photodermatitis and hepatic failure. What drug can cause such disorders?
a. Paracetamol
b. Doxycycline
c. Ascorbic acid
d. Acetylcysteine
e. Codeine phosphate

65. 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. Glycolipids
c. Triacylglycerols (triglycerides)
d. Sterol esters
e. Phospholipids

66. 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. Thimble-shaped
b. Ligulate
c. Bilabiate

d. Pseudoligulate
e. Funnelform

67. Gelatin expands the most in the following solvent:
a. Acetic acid solution
b. Diethyl ether
c. Water
d. Ethanol
e. Benzene

68. 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. Murexide
c. Phenolphthalein
d. Diphenylamine
e. Eosin

69. 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. Naloxone
c. Droperidol
d. Levodopa
e. Valerian extract

70. 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

71. 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. Serotonin receptors
b. Cholinergic receptors
c. Adrenoceptors
d. Histamine receptors
e. Benzodiazepine receptors

72. 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 cationite in the RH-form, and then through the cationite in the RK-form
b. Through the cationite in the RH-form, and then through the anionite in the ROH-form
c. Through the anionite in the R2SO4-form, and then through the cationite in the ROH-form
d. Through the anionite in the ROH-form, and then through the cationite in the R2Ca-form
e. Through the cationite in the RK-form, and then through the anionite in the ROH-form

73. 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. Famotidine
d. Gastrozepin (Pirenzepine)
e. Almagel (algeldrate + magnesium hydroxide)

74. What type of parenchyma usually has aleurone or starch grains and droplets of a fatty oil in its

cells?

a. Storage parenchyma

b. Folded parenchyma

c. Water-storing parenchyma

d. Columnar parenchyma

e. Spongy parenchyma

75. 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. Oligocythemic hypovolemia

b. Polycythemic hypervolemia

c. Normocythemic hypovolemia

d. Polycythemic hypovolemia

e. Oligocytemic hypervolemia

76. A patient with acute cardiac failure was prescribed an adrenoceptor agonist. Name this drug:

a. Salbutamol

b. Dobutamine

c. Metoprolol

d. Corglycon (Convallariae glycoside)

e. Digoxin

77. 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. White precipitate forms

c. Green coloring of solution disappears

d. Green coloring of precipitate appears

e. Blue coloring disappears

78. What method is used for quantification of magnesium sulfate solution for injections?

a. Cerimetry

b. Nitritometry

c. Complexonometry

d. Iodine monochloride titration

e. Acid-base titration

79. 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. Amino acids

d. Cholesterol

e. Bilirubin

80. 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. Secondary alteration

b. Primary alteration

c. Proliferation

d. Exudation

e. Progression

81. A colloidal system can be purified using filtration under excess pressure through a semipermeable membrane. Name this purification method.

a. Diffusion

b. Filtration

c. Electrodialysis

d. Dialysis

e. Ultrafiltration

82. A diagnostic features of which family is the presence of giants or a flower tube?
a. Celery
b. Solanaceae
c. Heather
d. Beech trees
e. Rose

83. 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. Krebs ornithine cycle
b. Citric acid cycle
c. Cori cycle
d. Linen cycle
e. Shemin-Rittenberg cycle

84. 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. Propionyl-CoA
b. Stearoyl-CoA
c. Acetoacetyl-CoA
d. Palmitoyl-CoA
e. Oxymethylglutaryl-CoA

85. A doctor needs to prescribe the patient a drug for replacement therapy after thyreoidectomy. What drug would you recommend?
a. L-thyroxine
b. Thiamazole
c. Parathyroidin
d. Prednisolone
e. Insulin

86. 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. Aplastic
b. Posthemorrhagic
c. Folic acid-deficiency
d. Hemolytic
e. Iron-deficiency

87. 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. Pb^2+
b. Ca^2+
c. Hg^2+
d. Ba^2+
e. Ag^+

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

89. 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. Amygdalus communis
b. Althaea officinalis
c. Melissa officinalis
d. Hyoscyamus niger
e. Polygonum persicaria

90. What feature of a leaf is characteristic of Poaceae?
a. Ochrea
b. Leaf blade
c. Petiole
d. Stipules
e. Leaf sheath

91. 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. T helper cells
b. Endotheliocytes
c. B lymphocytes
d. Suppressor T cells
e. Hepatocytes

92. 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. F^-
b. SO_3^2-
c. NO_2^-
d. NO_3^-
e. MnO_4^-

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

94. What solution has the highest osmotic pressure at the temperature of 298 K?
a. Glucose solution
b. Sodium benzoate solution
c. Sodium sulfate solution
d. Aluminum sulfate solution
e. Urea solution

95. 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. Hygrophytes
c. Succulents
d. Hydrophytes
e. Xerophytes

96. 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. Neutrophilic
b. Monocytic
c. Lymphocytic
d. Eosinophilic

e. Basophilic

97. There are plants selected, that have tubular, ligulate, pseudoligulate and funnelform flowers, clustered in simple flowerheads. These plants belong to the following family:

a. Asteraceae (Compositae)
b. Solanaceae
c. Valerianaceae
d. Tiliaceae
e. Ericaceae

98. Which of the following reactions is required in order to obtain an azo dye out of an aromatic amine?

a. Reduction and diazotization
b. Diazotization and interaction with potassium cyanide
c. Salt formation and nitration
d. Alkylation and nitrosation
e. Diazotization and azo compound

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

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

101. 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. Pellagra
b. Phenylketonuria
c. Diabetes mellitus
d. Albinism
e. Myxedema

102. What changes occur with the entropy of an isolated system, when it spontaneously approaches the equilibrium state?

a. Does not change
b. Reaches its minimum
c. Reaches its maximum
d. Decreases linearly
e. Tends to infinity

103. Tests for agglutination and lysis of the Leptospira bacteria are used in microbiological diagnostics of leptospirosis. How should these tests be evaluated?

a. With unaided eye
b. With dark field method
c. With microscope set at low magnification
d. With agglutinoscope
e. Against dark background

104. On a fusiblity curve of a two-component system with simple eutectic we can observe the following above the liquidus line:

a. One component is liquid, another is solid
b. Each component is partially in different aggregate states
c. Both components are in gaseous state
d. Both components are in liquid state
e. Both components are in solid state

105. 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 bacilli in short chains
b. Gram-positive cocci in short chains
c. Gram-negative cocci in short chains
d. Gram-negative cocci in grape-like clusters
e. Gram-positive cocci in grape-like clusters

106. To accurately calculate the reaction velocity constant by the activation energy value, the steric factor is used, which takes into account:

a. Temperature of the reaction mixture
b. Mutual orientation of the reacting molecules
c. Chemical properties of the interacting compounds
d. Structure of the molecules in the interacting compounds
e. Concentration of the reactants

107. 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. Nasal swab
b. Blood
c. Pharyngeal and nasal swabs
d. Wound material
e. Pharyngeal swab

108. A tumor of the adenohypophysis disturbs the synthesis of tropic hormones and causes acromegaly. What hormone would exhibit elevated levels in this case?

a. Oxytocin
b. Luteinizing
c. Somatotropin
d. Vasopressin
e. Follicle-stimulating

109. 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. Iron lactate
b. Cyanocobalamin
c. Nicotinic acid
d. Coamidum
e. Ascorbic acid

110. 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. Potassium chloride
b. Calcium chloride
c. Sodium sulfate
d. Sodium bromide
e. Trilon B (disodium EDTA)

111. 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. Penicillin, streptomycin
b. Clotrimazole, nystatin
c. Tetracycline, oleandomycin
d. Erythromycin, monomycin
e. Sulgin (sulfaguanidine), phthalazol (phthalylsulfathiazole)

112. 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. Syneresis
b. Sensitization
c. Solubilization
d. Sedimentation
e. Synergism

113. What reaction occurs when ascorbic acid is being determined by means of iodometry?

a. Acylation
b. Redox
c. Neutralization
d. Complex formation
e. Precipitation

114. "Collargol" pharmaceutical preparation is a colloidal solution of silver that contains a high-molecular compound. What is the function of this compound?

a. Induces coagulation
b. Decreases aggregate stability
c. Increases degree of dispersion
d. Facilitates sedimentation
e. Increases aggregate stability

115. 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. Tocopherol
b. Adrenaline
c. Cortisol
d. Cholesterol
e. Retinol

116. 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. Bradycardia
b. Dysbiosis
c. Withdrawal syndrome
d. Bronchospasm
e. Drug tolerance

117. Foam aerosols are used for burn treatment. What type of dispersed systems are foams?

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

118. What is the mechanism of Br_2 attaching to propene?

a. A_N
b. A_E

c. S_R
d. S_E
e. S_N

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

120. 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. Aldosterone
b. Histamine
c. Renin
d. Nitric oxide
e. Catecholamines

121. A man with Trichomonas urethritis was prescribed an imidazole derivative for treatment. Name this drug:

a. Ciprofloxacin
b. Furacilin (Nitrofural)
c. Azithromycin
d. Metronidazole
e. Nitroxoline

122. An analytical chemist conducts qualitative analysis of IV group cations. What reagent can be used to determine zinc?

a. Diphenylamine
b. Thiourea
c. Dithizone
d. Alizarin
e. Murexide

123. What forms when gelatin dissolves in water at an elevated temperature?

a. Suspension
b. Emulsion
c. Elastic xerogel
d. Brittle xerogel
e. Molecular solution

124. When an isolated system spontaneously approaches its equilibrium, its entropy:

a. Reaches minimum
b. Reaches maximum
c. Approaches zero
d. Demonstrates linear magnification
e. Approaches infinity

125. What drug is administered in case of uterine inertia?

a. Vikasolum
b. Oxytocin
c. Progesterone
d. No-spa

e. Fenoterol

126. 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. Hypothalamic-pituitary-adrenal axis
b. Renin-angiotensin-aldosterone system
c. Kinin-kallikrein system
d. Sympathoadrenal system
e. Central nervous system

127. 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. Proliferation
d. Immunologic
e. Exudation

128. 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. Titration curve
c. Calibration curve
d. Emission spectrum
e. Logarithmic curve

129. 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. Steam sterilizer
b. Pasteur oven
c. Seitz filter
d. Autoclave
e. Koch apparatus

130. Some medicines are colloidal solutions. Stabilizers are added to them to increase their aggregate stability. What substances are called stabilizers?

a. Substances that have no effect on the interfacial tension
b. Substances that can increase the interfacial tension
c. Substances that can increase the free energy of a system
d. Substances that first increase the interfacial tension, and then reduce it over time
e. Substances that can be adsorbed and reduce the interfacial tension

131. Enzymes are widely used as drugs in pharmacy. What is the main feature that separates enzymes from non-biological catalysts?

a. High dispersion
b. High universality
c. High specificity and selectivity
d. Low universality
e. High homogeneity

132. 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. Arcuate
c. Palmate
d. Parallel

e. Pinnate

133. Select a metallochromic indicator from the list below.
a. Eosin
b. Litmus
c. Methyl orange
d. Murexide
e. Starch

134. 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. Streptococcus
b. Meningococcus
c. Pneumococcus
d. Gonococcus
e. Micrococcus

135. 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. Vasopressin
b. Somatotropin
c. Thyrotropin
d. Corticotropin
e. Oxytocin

136. 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. Epidermis
b. Periderm
c. Xylem
d. Phloem
e. Rhytidoma

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

138. 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. Pirenzepine
b. Omeprazole
c. Pantoprazole
d. Famotidine
e. De-Nol (Bismuth subnitrate)

139. Name the difference in potentials that occurs due to uneven distribution of electrolytes between the outer and inner surfaces of the cell membrane:
a. Chemical biopotential
b. Membrane potential
c. Diffuse biopotential
d. Surface biopotential
e. Contact biopotential

140. Common nettle, hop, black elderberry relate to the plants that require soils rich in nitrogen compounds, that is, such plants are called:

a. Calciphiles
b. Nitrophobes
c. Calciphobes
d. Nitrophytes
e. Halophytes

141. 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. Thiamine
d. Folic acid
e. Riboflavin

142. Neutralization of drugs, particularly sulfonamides, in the liver occurs by means of acetylation. Name the compound that causes acetylation reaction:

a. Acetyl-CoA
b. Glutathione
c. Succinyl-CoA
d. S-adenosylmethionine
e. Glycine

143. 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. Thiamine bromide
c. Aspirin
d. Magne B_6
e. Ascorutin (Ascorbic acid + Rutoside)

144. 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 salvage
b. Glucose synthesis
c. Thymidine monophosphate synthesis
d. Adenosine triphosphate synthesis
e. Purine nucleotides disintegration

145. 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. Gastritis
c. Infectious hepatitis
d. Enterocolitis
e. Acute pancreatitis

146. 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. Dysregulatory
b. Restrictive
c. Perfusion
d. Diffusion
e. Obstructive

147. 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. Phenazepam
b. Ketorolac
c. Doxylamine
d. Phenobarbital
e. Piracetam

148. What drug can be classified as an angiotensin-converting enzyme blocker based on its mechanism of action?
a. Lisinopril
b. Furosemide
c. Benzohexonium
d. Verapamil
e. Valsartan

149. 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. Fluconazole
b. Bicillin-5
c. Mebendazole
d. Chingamine (Chloroquine)
e. Amoxicillin

150. 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. Leonurus cardiaca
b. Mentha piperita
c. Lamium album
d. Salvia officinalis
e. Melissa officinalis

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

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

153. 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. Inhibition of the respiratory center function
c. Impaired function of the neuromuscular system
d. Impaired function of spinal cord motoneurons
e. Pulmonary dysfunction

154. 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. Increases

b. Decreases
c. First increases, than decreases
d. First decreases, than increases
e. Remains unchanged

155. 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. Althaea officinalis
b. Thymus serpyllum
c. Tussilago farfara
d. Plantago major
e. Plantago psyllium

156. To quickly relieve the state of acute psychosis, the patient was prescribed a rapid/short-acting psychotropic drug. Name this drug:
a. Amitriptyline
b. Piracetam
c. Valerian extract
d. Droperidol
e. Caffeine and sodium benzoate

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

158. 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. Salvia officinalis
c. Mentha piperita
d. Melissa officinalis
e. Lamium album

159. 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. Opposite to the charge of the colloidal particle
b. Identical to the charge of the nucleus
c. Opposite to the counterions of the adsorption layer
d. Identical to the charge of the colloidal particle
e. Identical to potential-determining ions

160. After a traffic accident the driver presents with increased blood glucose. What mechanism leads to hyperglycemia in this case?
a. Decreased production of glucagon
b. Decreased production of insulin
c. Increased production of somatotropic hormone
d. Sympathoadrenal system activation
e. Decreased tone of parasympathetic nervous system

161. In human body, thyroxine is an important thyroid hormone. What microelement is necessary to synthesize this hormone?
a. Iron
b. Copper
c. Potassium

d. Iodine
e. Calcium

162. Alkaptonuria is caused by a hereditary disorder of the metabolism of a certain amino acid. Name this amino acid.
a. Alanine
b. Tyrosine
c. Phenol
d. Tryptophan
e. Arginine

163. 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. Obligate anaerobes
b. Obligate aerobes
c. Capnophiles
d. Microaerophiles
e. Facultative anaerobes

164. Emulsions, ointments, pastes, etc., can be made by comminuting solids and liquids in a suitable medium. This process is called:
a. Condensation
b. Sedimentation
c. Adhesion
d. Coagulation
e. Dispersion

165. 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. Symbiosis of the root and algae
c. Formation of storage roots and root tubers
d. Maintaining the spatial position of a plant
e. Respiration

166. 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. Osmophores
b. Hydropotes
c. Nectaries
d. Glandules
e. Hydatodes

167. A female student with a cold has been prescribed an antipyretic medication. Specify this drug:
a. Oxytocin
b. Cyanocobalamin
c. Famotidine
d. Paracetamol
e. Ascorbic acid

168. 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 become 27 times higher
c. It will become 9 times higher
d. It will remain unchanged

e. It will become 3 times lower

169. 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. Lactase

c. Lipase

d. Invertase

e. Maltase

170. 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. Kitt-Tarozzi medium

b. Meat-peptone agar, meat-peptone broth

c. Endo medium

d. Egg yolk-salt agar

e. Levin medium

171. What physical phenomenon is measured using stalagmometry?

a. Osmotic pressure

b. Concentration

c. Surface tension

d. Isoelectric point

e. Molecular mass

172. 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. Zooanthroponoses

e. Zoonoses

173. What emulsions can be stabilized by emulsifiers, if the solubility of these emulsifiers is higher in water than in oil?

a. Invert emulsions

b. Concentrated emulsions

c. Dilute emulsions

d. Emulsions of the second type

e. Direct emulsions

174. 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. Concentration galvanic cell

b. Reversible galvanic cell

c. Galvanic cell with ionic transport

d. Galvanic cell without ionic transport

e. Chemical galvanic cell

175. What substance causes impaired biotin absorption?

a. Ferritin

b. Globulin

c. Avidin

d. Albumin

e. Transferrin

176. 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. alpha_2-globulin
b. Bence-Jones protein
c. gamma-globulin
d. Glycated hemoglobin
e. C-reactive protein

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

178. When herbal raw material of Calendula officinalis and Matricaria chamomilla is being harvested, inflorescences of the following type are being collected:
a. Anthodium
b. Capitulum
c. Umbel
d. Corymb
e. Spike

179. 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. Ba^2+
c. Pb^2+
d. Ag^+
e. Mg^2+

180. 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. Sarcinae
b. Yeast fungi
c. Micrococci
d. Haemolytic streptococci
e. Mold fungi

181. 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. Phelloderm
b. Phloem
c. Cambium
d. Periderm
e. Epidermis

182. 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 glycolysis
b. Activation of microsomal oxidation
c. Activation of protein peroxidation
d. Activation of lipid peroxidation
e. Activation of uric acid synthesis

183. 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. Brown precipitate
b. Golden scales
c. Blue precipitate

d. White precipitate
e. Gas bubbles

184. What anion of the 2nd analytic group produces black precipitate with group reagent $AgNO_3$?
a. Cl^-
b. I^-
c. NCS^-
d. S^{2-}
e. Br^-

185. A female patient asked a pharmacist to recommend her a drug for headache with antiplatelet effect. Specify this drug:
a. Tramadol
b. Fentanyl
c. Promedol
d. Acetylsalicylic acid
e. Codeine phosphate

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

187. Iodimetry involves use of standard solutions of iodine and $Na_2S_2O_3$. What substance is used to standardize the sodium thiosulfate solution?
a. $K_2Cr_2O_7$
b. K_2CO_3
c. $N_2B_4O_7$
d. As_2O_3
e. NaCl

188. 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. NK cells
c. Killer T cells
d. Phagocytes
e. Macrophages

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

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

191. 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. IgM
b. IgG
c. IgE
d. IgD
e. IgA

192. 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. Endoplasmic reticulum
c. Golgi complex
d. Vacuoles
e. Mitochondria

193. Sanitary microbiological investigation of potable water has detected coliphages. What conclusion can be made about the sanitary-hygienic status of this water?

a. Artesian water
b. The water is safe to drink after boiling
c. Fecal contamination
d. The water is safe to drink
e. The water is for industrial use only

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

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

195. Aerosols are one of the dosage forms. Name the phenomenon when aerosol particles move in the direction of decreasing temperature.

a. Photophoresis
b. Electrophoresis
c. Sedimentation
d. Thermophoresis
e. Peptization

196. 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. 4.7
b. 14.0
c. 9.4
d. 5.5
e. 7.0

197. 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. Tonsillitis
b. Mumps
c. Meningococcal nasopharyngitis
d. Scarlet fever
e. Diphtheria

198. Metal ions in the blood are transported in a complex with proteins. What blood protein contains copper?

a. Fibrinolysin
b. Ceruloplasmin
c. Fibrinogen
d. Albumin
e. Thrombin

199. 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. Morphologic
b. Antigenic
c. Cultural
d. Tinctorial
e. Biochemical

200. 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. Palpitations
b. Problematic swallowing
c. Heartburn
d. Nausea
e. Diarrhea

201. After eating early vegetables that had high nitrite levels, a child developed hemic hypoxia. It is caused by accumulation of the following substance:
a. Carbhemoglobin
b. Carboxyhemoglobin
c. Methemoglobin
d. Oxyhemoglobin
e. Deoxyhemoglobin

202. 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. Pilus
b. Plasmid
c. Spore
d. Capsule
e. Flagella

203. Racemose clusters of calcium carbonate crystals are detected among the waste products of a protoplast. These crystals are:
a. Isolated crystals
b. Styloid crystals
c. Raphides
d. Cystoliths
e. Crystal druses

204. Which phenomenon is uncharacteristic of aerosols?
a. Coagulation
b. Thermophoresis
c. Dissociation
d. Thermoprecipitation
e. Photophoresis

205. 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. Cell wall structure

b. Cytoplasmic membrane structure

c. Cell size

d. Chemical composition of the capsule

e. Presence of ribosomes

206. 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. R-plasmids

c. Mitochondrion

d. Golgi apparatus

e. Nucleoid

207. A patient with primary hypertension is prescribed captopril. What is this drug's mechanism of action?

a. Angiotensin II receptors block

b. Block of slow calcium channels

c. Inhibition of angiotensin converting enzyme activity

d. alpha-adrenergic block

e. beta-adrenergic block

208. What reagent allows distinguishing between maltose (a reducing disaccharide) and sucrose (a non-reducing disaccharide)?

a. K_4[Fe(CN_6)]

b. FeCl_3

c. NaOH

d. Br_2

e. Tollens reagent

209. A doctor has prescribed an adrenocortical hormone drug for a patient with bronchial asthma. Specify this drug.

a. Loratadine

b. Atropine sulfate

c. Prednisolone

d. Diclofenac sodium

e. Salbutamol

210. A solution contains iodide and chloride ions. Choose the reagent to detect iodide ions:

a. Limewater

b. Gypsum water

c. Hydrogen sulfide water

d. Barium water

e. Chlorine water

211. 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. Parenteral transmission

b. Airborne droplet transmission

c. Waterborne transmission

d. Contact transmission

e. Alimentary transmission

212. According to the Smoluchowski coagulation theory, the process of coagulation can be described with the kinetic equation of:

a. The fraction order

b. The third order
c. The first order
d. The zero order
e. The second order

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

214. 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. Reactive hyperemia
b. Metabolic hyperemia
c. Neuroparalytic hyperemia
d. Neurotonic hyperemia
e. Work hyperemia

215. A woman suffering from neurosis has disturbed sleep. What drug is optimal for insomnia treatment?
a. Nitrazepam
b. Bromisoval
c. Phenobarbital
d. Aethaminalum-natrium (Pentobarbital)
e. Valerian tincture

216. 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. Hyposecretion
b. Hypersecretion and hyperchlorhydria
c. Hypochlorhydria
d. Achlorhydria
e. Achylia

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

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

219. 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. Mineralocorticoid
b. Gestagenic drugs
c. Glucocorticoids
d. Estrogenic drugs
e. Anabolic steroids

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

221. What disperse system can be classified as liquid-liquid based on its aggregate state?

a. Fog
b. Lather
c. Smoke
d. Activated carbon
e. Milk

222. 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. Heating in the burner flame
c. Boiling under 60^oC five times
d. Formaldehyde vapor sterilization
e. Soaking in 1% chloramine-B solution

223. Introduction of immune preparation allows to form artificial acquired immunity. What preparation of those listed below is used to form artificial passive immunity?

a. Antitetanus serum
b. BCG vaccine
c. DPT vaccine
d. Choleragen-anatoxin
e. Brucellosis vaccine

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

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

225. 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. Rickettsia
c. Fungi
d. Bacteria
e. Viruses

226. Research of reaction rate dependance from various factors allows to intensify technological processes. What factor textbfHAS NO effect on reaction rate constant?

a. Solid substance dispersion degree
b. Reacting agents concentration
c. Solvent nature
d. Temperature
e. Reagents nature

227. Choose the indicator and titration method to determine hydrogen carbonate ions in a drug:

a. Methyl-orange, acidimetry
b. Phenolphthalein, alkalimetry
c. Phenolphthalein, acidimetry
d. Murexide, acidimetry
e. Methyl-orange, alkalimetry

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

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

230. 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. Potassium hexacyanoferrate(II)
b. Hydrochloric acid
c. Sodium dihydrogen phosphate
d. Nitric acid
e. Potassium chloride

231. 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. Conductometry
b. Amperometry
c. Coulometry
d. Polarography
e. Potentiometry

232. 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. Diazepam
b. Novocaine
c. Fentanyl
d. Diclofenac sodium
e. Phenobarbital

233. Polarography is one of the electrochemical methods of analysis. What parameter is used in polarographic analysis to identify the substance being analyzed?
a. Width of a polarographic wave
b. Position of a polarographic wave
c. Height of a polarographic wave
d. Half-wave potential
e. Magnitude of the electromotive force

234. 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. Foreign body embolism

b. Gas embolism

c. Thromboembolism

d. Air embolism

e. Fat embolism

235. 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 oxide

b. Ammonium nitrate

c. Aluminium carbonate

d. Ammonium chloride

e. Aluminium hydroxide

236. Which one of the listed ions has the greatest mobility?

a. K^+

b. CN^-

c. H_3O^+

d. Cl^-

e. Na^+

237. An analytical chemist conducts a systematic analysis of a mixture of anions. What reagents are used in the test for oxidizing anions?

a. Ba(NO_3)_2

b. HCl in the presence of amyl alcohol

c. KI in the presence of chloroform

d. Na_2C_2O_4

e. AgNO_3 in the presence of HNO_3

238. What substance can enter into substitution and addition reactions?

a. Acetylene

b. Ethanol

c. Ethylene

d. Polypeptide

e. Ethane

239. What short-acting loop diuretic can cause significant hypokalemia?

a. Amiloride

b. Triamterene

c. Mannitol

d. Furosemide

e. Spironolactone

240. 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. Cu(NO_3)_2

b. Na_3PO_4

c. KCl

d. K_3PO_4

e. Al_2(SO_4)_3

241. Proteins carry out various extremely important functions in the human body. Actin and myosin perform the following function:

a. Regulatory

b. Transport

c. Receptor

d. Cogenetic

e. Contractile (motor)

242. 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. Spasmolytic
b. Anti-inflammatory
c. Antiplatelet
d. Antipyretic
e. Analgesic

243. A 65-year-old patient has been diagnosed with prostate adenoma. What adrenoblocker should he be prescribed?

a. Metoprolol
b. Propranolol
c. Doxazosin
d. Nifedipine
e. Atenolol

244. What hormone changes glucose levels in the blood and is produced in the pancreas?

a. Insulin
b. Growth hormone
c. Somatostatin
d. Aldosterone
e. Testosterone

245. Name the pharmacopoeial method for determining the relative molecular mass of high-molecular compounds:

a. Calorimetry
b. Viscosimetry
c. Cryoscopy
d. Ebullioscopy
e. Osmometry

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

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

247. 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. Coli-Proteus bacteriophage
b. Lactoglobulin
c. Colibacterin
d. Furazolidone
e. Bifidumbacterin

248. Among NSAIDs, the least damaging effect on the gastrointestinal mucosa is characteristic of:

a. Acetylsalicylic acid
b. Diclofenac
c. Naproxen
d. Butadion (Phenylbutazone)
e. Celecoxib

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

a. Corymb
b. Spike

c. Flat capitulum
d. Umbel
e. Round capitulum

250. Moisture content of thermally unstable preparations can be determined by:
a. Karl Fischer titration
b. Iodometry
c. Bromatometry
d. Nitritometry
e. Permanganatometry

251. How does the value of the critical micelle concentration in homologous series change with an increase in the molecular mass of the surfactant?
a. Decreases
b. Remains unchanged
c. Sharply increases
d. Increases
e. Reaches its maximum and then decreases

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

253. 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. Increasd filtration
b. Increased secretion
c. Decreased reabsorption
d. Increased reabsorption
e. Decreased filtration

254. The cells of Brassica oleracea leaves contain a certain vitamin that facilitates healing of gastric and duodenal ulcers. It is vitamin:
a. U
b. K
c. A
d. C
e. E

255. What method is used for the quantification of ammonia?
a. Acidimetry, direct titration
b. Alkalimetry, direct titration
c. Complexonometry
d. Acidimetry, back titration
e. Alkalimetry, back titration

256. Microscopy of plants detects parenchymal cells with thin membranes, a large nucleus, and a large number of ribosomes. What tissue is it?
a. Parenchyma
b. Secretory tissue
c. Dermal tissue
d. Mechanical tissue
e. Meristematic tissue

257. 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. Cytomegalovirus
c. HTLV-1 and HTLV-2
d. Human papillomaviruses
e. Adenoviruses

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

259. 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 aviculare
c. Hypericum perforatum
d. Polygonum persicaria
e. Polygonum hydropiper

260. Name the process, when the precipitate obtained as a result of coagulation transforms into a stable colloidal solution.
a. Colloidal protection
b. Peptization
c. Flocculation
d. Heterocoagulation
e. Micelle formation

261. 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. Increase of hydrostatic blood pressure
b. Decrease of oncotic blood pressure
c. Hyperglycemia
d. Increase of oncotic blood pressure
e. Decrease of hydrostatic blood pressure

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

263. 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. Malate
b. Fumarate
c. Citrate
d. Alpha-ketoglutarate
e. Succinate

264. Name the process of spontaneous adhesion of drops in an emulsion to each other:
a. Flocculation
b. Coagulation
c. Flotation

d. Sedimentation
e. Coalescence

265. 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. Hydrodynamic
b. Colloidal-osmotic
c. Lymphogenic
d. Toxic
e. Membranogenic

266. The pharmacy of a tuberculosis clinic has received tuberculin. What is the purpose of this substance?
a. Specific therapy of tuberculosis
b. Allergic diagnostics of tuberculosis
c. Serological diagnostics of tuberculosis
d. Phagotyping of mycobacteria
e. Specific prevention of tuberculosis

267. 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. Escherichia
b. Salmonella
c. Shigella
d. Proteus
e. Cholera vibrio

268. Molecular absorption analysis is based on the Beer–Lambert–Bouguer law. According to this law, optical density of a solution is:
a. Directly proportional to the concentration and inversely proportional to the layer thickness
b. Directly proportional to the layer thickness and concentration of the substance
c. Directly proportional to the concentration and inversely proportional to the monochromatic light absorption index
d. Directly proportional to the layer thickness and monochromatic light absorption index
e. Inversely proportional to the layer thickness and concentration of the substance

269. 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. Leukocytosis
b. Fever
c. Tachycardia
d. Increased ESR
e. Reddening

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

271. 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. Rutin

c. Ascorbic acid
d. Tocopherol acetate
e. Pyridoxine

272. What solution is used to standardize the silver(I) nitrate titrant solution in Mohr's method?
a. Sodium carbonate solution
b. Sodium oxalate solution
c. Sodium chloride solution
d. Potassium dichromate solution
e. Sodium tetraborate solution

273. 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 tinctorial properties
b. To determine the mobility of the bacteria
c. To measure the sensitivity to antibiotics
d. To study the antigenic properties
e. To determine the pathogenicity factors

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

275. In the process of coagulation by mixtures of different electrolytes, they seem to counteract each other's effect. Name this phenomenon:
a. Antagonism
b. Sedimentation
c. Additivity
d. Mutual coagulation
e. Synergism

276. What broad-spectrum antibiotic is contraindicated for children under 14 years of age because it disrupts the formation of the skeleton?
a. Ampicillin
b. Ceftriaxone
c. Acyclovir
d. Doxycycline
e. Azithromycin

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

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

279. 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. Magnesium sulfate
b. Unithiol (Dimercaptopropansulfonate)
c. Potassium permanganate
d. Sodium chloride
e. Furacilin (Nitrofural)

280. 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. Biot respiration
b. Cheyne-Stokes respiration
c. Slow, deep, with labored expiration
d. Rapid, shallow
e. Slow, deep, with labored inspiration

281. 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. Shigellosis
b. Botulism
c. Cholera
d. Escherichiosis
e. Salmonellosis

282. 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. Subhepatic
b. Hereditary
c. Hepatic
d. Cholestatic
e. Hemolytic

283. 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. Twining
c. Creeping
d. Recumbent
e. Scandent

284. After examination, the patient was diagnosed with alkaptonuria. What enzyme is deficient in this case, causing this pathology?

a. Phenylalanine hydroxylase
b. Monoamine oxidase
c. Homogentisic acid oxidase
d. Tyrosinase
e. Thyroxine hydroxylase

285. 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. Thrombocytopenic purpura
b. Hemophilia
c. Radiation sickness
d. Anemia

e. Acute vascular purpura

286. 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. Doxycycline hydrochloride
c. Lidocaine hydrochloride
d. Flemoxin (Amoxicillin)
e. Hydrogen peroxide

287. On examination the patient's sclera and oral mucosa are icteric. What biochemical blood value can be expected to be increased?

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

288. What substance is a mediator of delayed-type hypersensitivity?

a. Lymphokines
b. Prostaglandins
c. Serotonin
d. Histamine
e. Bradykinin

289. Which one of the substances listed below is not a surfactant?

a. Sodium stearate
b. 1-Pentanol
c. Sodium chloride
d. Sodium oleate
e. Sodium palmitate

290. 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. Vitamin E
c. Nicotinic acid
d. Vitamin C
e. Vitamin D

291. 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. Chronic
b. Post-vaccination
c. Persistent
d. Acute
e. Incubation

292. Short lignified stem is characteristic of the Allium cepa genera. It is a part of modified sprout that is called:

a. Phylloclade
b. Tendril
c. Rhizome
d. Bulb
e. Tuber

293. 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. Calciferol
b. Glicerol
c. alpha-tocopherol
d. Glucose
e. Cobalamine

294. 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. Sclerosis
b. Alteration
c. Proliferation
d. Regeneration
e. Exudation

295. A woman complains of elevated body temperature, weight loss, irritability, palpitations, and exophthalmos. Such changes are characteristic of the following endocrinopathy:
a. Hypercorticism
b. Hypoaldosteronism
c. Hypothyroidism
d. Hyperaldosteronism
e. Hyperthyroidism

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

297. 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. Yellow
b. Green
c. Red
d. White
e. Black

298. 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. Inulin
b. Aleurone grains
c. Starch grains
d. Chlorophyll grains
e. Glycogen

299. 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. 3
b. 2
c. 5
d. Many
e. 8

300. 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. Lisinopril
c. Atorvastatin
d. Enalapril
e. Hydrochlorothiazide

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

302. 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 oncotic blood pressure
b. Decreased number of functional glomeruli
c. Decreased pressure in the glomerular capsule
d. Decreased hydrostatic pressure in the glomerular capillaries
e. Increased pressure in the glomerular capsule

303. To quickly stop an attack of angina pectoris, a 55-year-old patient was prescribed an organic nitrate drug. What drug is it?

a. Nifedipine
b. Nitroglycerin
c. Octadine (Guanethidine)
d. Labetalol
e. Prazosin

304. A pathological process in the blood serum has caused increased ammonia levels. What is the main way of toxic ammonia neutralization?

a. Ammonium salt synthesis
b. Uric acid synthesis
c. Alanine synthesis
d. Glycine synthesis
e. Urea synthesis

305. 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. Immunoglobulin
b. Inactivated vaccine
c. Interferon
d. Ribavirin
e. Live vaccine

306. 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. Catecholamines
b. Androgens
c. Thyroid hormones
d. Estrogens
e. Glucocorticoids

307. Which of the given reactions produces ethane as a result?

a. [Al_4C_3xrightarrow[]H_2O]
b. [CO + 2H_2xrightarrow[]Fe, t^o]

c. [C_2H_5OHxrightarrow[]k.H_2SO_4, t^o]
d. [CH_2=CH_2xrightarrow[t^o, p]H_2, кат.]
e. -

308. 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. Oxyhemoglobin
b. Carboxyhemoglobin
c. Carbhemoglobin
d. Fetal hemoglobin
e. Methemoglobin

309. 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. Endorphins
b. Angiotensins
c. Enkephalins
d. Interleukins
e. Prostaglandins

310. 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. Nandrolone
c. Atropine sulphate
d. Trihexyphenidyl
e. Piroxicam

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

312. 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. Leaf
b. Shoot
c. Androecium
d. Pedicel
e. Receptacle

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

314. Sabin polyvalent oral vaccine is used for planned immunization of children against poliomyelitis. However, this vaccine is absolutely contraindicated for the:
a. Children with congenital or acquired immunodeficiencies
b. Children vaccinated with Salk vaccine
c. Adolescents
d. Preschoolers
e. Children with recent medical history of infectious diseases

315. 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. Antisepsis

b. Asepsis

c. Deratisation

d. Disinfection

e. Sterilization

316. 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. Photoreactivation

b. Lyophilization

c. Tyndalization

d. Sublimation

e. Sterilization

317. A 55-year-old patient was diagnosed with angina pectoris. A calcium channels blocking agent was prescribed for the treatment. Name this drug:

a. Amlodipine

b. Atenolol

c. Labetalol

d. Reserpine

e. Octadinum (Guanethidine)

318. What medicine increases the risk of toxic effects when taken along with gentamicin?

a. Erythromycin

b. Methylprednisolone

c. Furosemide

d. Penicillin

e. Caffeine

319. 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. Carbonic anhydrase

b. Catalase

c. Lipase

d. Heme oxygenase (haem oxygenase)

e. Pyruvate kinase

320. What hormone can cause hypernatremia and hypokalemia, if its secretion becomes increased?

a. Parathormone

b. Atrial natriuretic hormone (peptide)

c. Glucagon

d. Adrenaline

e. Aldosterone

321. Metallochromic indicators are used in complexometric titration, when determining total water hardness. For this purpose, the following can be used as an indicator:

a. Methyl red

b. Phenolphthalein

c. Eriochrome black T

d. Potassium chromate

e. Fluorescein

322. What coordinates are used to build monomolecular adsorption isotherms?

a. Adsorption - concentration

b. Inverse adsorption - inverse concentration
c. Surface tension - concentration
d. Inverse adsorption - concentration
e. Logarithm of adsorption - concentration

323. Photometry is one of the most common instrumental methods of analysis. It is based on the measurement of:
a. Wavelength
b. Fluorescence intensity
c. Rotation angle
d. Optical density
e. Refractive index

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

325. Some hormones are synthesized from amino acids in the body. What amino acid is the precursor to the thyroxine hormone?
a. Arginine
b. Cysteine
c. Tyrosine
d. Histidine
e. Glutamine

326. In medical and pharmaceutical practice the phenomena of adsorption, wetting, and adhesion are regularly observed. Name this group of phenomena:
a. Surface phenomena
b. Molecular-kinetic phenomena
c. Physico-chemical phenomena
d. Electrokinetic phenomena
e. Optical phenomena

327. What optical phenomenon is most intensive in suspensions?
a. Light absorption
b. Light reflection
c. Light refraction
d. Light scattering
e. Light transmission

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

329. The population is being vaccinated for specific disease prevention. What type of immunity is developed as the result of this vaccination?
a. -
b. Naturally acquired active
c. Naturally acquired passive
d. Artificially acquired passive
e. Artificially acquired active

330. Plants that grow in moderately humid conditions belong to the following ecological group:
a. Succulents
b. Xerophytes
c. Hygrophytes
d. Hydrophytes
e. Mesophytes

331. 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 butyrylcholinesterase activity
c. Stimulation of beta-adrenergic receptors
d. Stimulation of alpha-adrenergic receptors
e. Increasing GABA levels in the brain

332. What cations have the highest mobility among those listed below?
a. Hydroxonium cations
b. Sodium cations
c. Ammonium cations
d. Potassium cations
e. Lithium cations

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

334. 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. Physostigmine salicylate
b. Dipyroxime (Trimedoxime bromide)
c. Prozerin (Neostigmine)
d. Isonitrozine
e. Galantamine hydrobromide

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

336. A melliferous tree has heart-shaped leaves and dichasial cyme inflorescences with winged perianth. This plant is:
a. Quercus robur
b. Aronia melanocarpa
c. Aesculus hippocastanus
d. Tilia cordata
e. Robinia pseudoacacia

337. 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 enzyme biosynthesis in the macroorganism
c. The lowest drug concentration that inhibits growth of a bacterial test culture
d. -
e. The lowest drug concentration that causes development of selective strains of test cultures

338. 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. Krebs cycle
d. Cori cycle
e. Pentose phosphate cycle

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

340. 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. Loratadine
d. Enterosgel (Polymethylsiloxane polyhydrate)
e. Ampicillin

341. Name the reactions and reagents that under certain conditions allow determination of certain ions in the presence of other ions:
a. Specific
b. Group
c. General
d. Characteristic
e. Selective

342. Pharmacy sells glaucine hydrochloride to a patient with chronic bronchitis. What common side effect should he be warned about?
a. Increase of intraocular pressure
b. Excitation of central nervous system
c. Allergic skin rashes
d. Decrease of arterial pressure
e. Disruption of cardiac rate

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

344. What indicator should be chosen for standardization of a hydrochloric acid solution using Na_2CO_3 and Na_2B_4O_7 solutions?
a. Murexide
b. Thymol blue
c. Eosin
d. Methyl red

e. Tropeolin 00

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

346. A patient with hypertension has been prescribed a drug that blocks angiotensin receptors. Specify this drug:
a. Apressin
b. Nifedipine
c. Captopril
d. Losartan
e. Prazosin

347. The following is used to determine the titrant volume in the process of titrimetric analysis:
a. Measuring glasses
b. Burettes
c. Cylinders
d. Measuring flasks
e. Measuring tubes

348. 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. Borrelia
b. Leptospira
c. Bordetella
d. Salmonella
e. Treponema

349. Surfactants and high-molecular compounds are added into concentrated emulsions to stabilize them. These substances are:
a. Activators
b. Emulsifiers
c. Solvents
d. Absorbents
e. Catalysts

350. What diuretic reduces excretion of uric acid?
a. Furosemide
b. Mannitol
c. Hydrochlorothiazide
d. Verospiron (Spironolactone)
e. Acetazolamide

351. Ammonium iron(III) sulfate can be used as an indicator in:
a. Alkalimetry
b. Acidimetry
c. Argentometry, Volhard method
d. Argentometry, Mohr method
e. Complexometric titration

352. What characteristic is used to choose indicator for titration analysis?
a. Equivalence point

b. Indicator constant
c. Titration curve jump
d. Transition interval
e. Titration indicator

353. 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. Arthus reaction
b. Stimulatory hypersensitivity reaction
c. Anaphylactic reaction
d. Cytolysis
e. Delayed hypersensitivity reaction

354. Separation of substances in chromatography is based on the ability of solutes:
a. To distribute between two mobile phases
b. To distribute between two stationary phases
c. To precipitate
d. To dissolve
e. To distribute between the mobile and stationary phases

355. 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. Pirenzepine
d. Pancreatine
e. Gordox (Aprotinin)

356. 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. Estrogens
b. Mineralocorticoids
c. Glucagon
d. Glucocorticoids
e. Insulin

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

358. Heating of sodium phenolate in CO_2 stream results in production of a certain carboxylic acid. Name the resulting compound:
a. Salicylic acid
b. Phenyl salicylate
c. Benzoic acid
d. Aminophenol
e. Ethyl salicylate

359. 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. Hydrophytes
b. Mesophytes
c. Ephemerals

d. Xerophytes
e. Hygrophytes

360. What Brassicaceae family plant has a cardiotonic effect?
a. Leonurus cardiaca
b. Rheum tanguticum
c. Erysimum diffusum
d. Capsella bursa-pastoris
e. Adonis vernalis

361. 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 oxalate
b. Potassium iodide
c. Ammonium hydroxide
d. Hydrochloric acid
e. Sodium hydroxide

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

363. 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. Decreased mass of functioning cardiomyocytes
b. Myocardial reperfusion injury
c. Volume overload of the heart
d. Pressure overload of the heart
e. Acute cardiac tamponade

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

365. 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. Deamination of amino acids
b. Bilirubin catabolism
c. Gluconeogenesis
d. Glycolysis
e. Hydroxylation of amino acids

366. 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. Collapse
b. Cardiac insufficiency
c. Left ventricular failure
d. Right ventricular failure
e. Portal hypertension

367. 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

368. Select from the list a compound that is a pyridinecarboxylic acid:

a. Nicotinic acid
b. Uric acid
c. Benzoic acid
d. Barbituric acid
e. Malic acid

369. The process of glycolysis starts with irreversible reaction of glucose transforming into glucose 6-phosphate. What enzyme catalyzes this reaction?

a. Hexokinase
b. Creatine kinase
c. Aldolase
d. Catalase
e. Lipase

370. 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. Reduction reaction
b. Hydrolysis reaction
c. Chemical condensation
d. Double exchange reaction
e. Solvent substitution

371. A structural analog of vitamin PP (nicotinic acid) is used as an antituberculous medicine. Name this medicine:

a. Isoniazid
b. Aspirin
c. Tetracycline
d. Riboflavin
e. Streptocide

372. 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. Yersiniosis
b. Salmonellosis
c. Typhoid fever
d. Nonspecific ulcerative colitis
e. Dysentery

373. Having matured, pistillate catkins of Betula penduta fall apart freeing nutlet seeds with:

a. Villous coma
b. One large wing petal
c. Two membranous wing petals
d. Two air vesicles
e. Bristly hooks

374. Leaves damage by mosaic discoloration has been detected at medicinal plantations. What microorganisms are the cause?

a. Plant-pathogenic fungi
b. Plant-pathogenic bacteria
c. Protozoa

d. Rickettsia

e. Plant-pathogenic viruses

375. 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. Streptomycin

c. Sulfanilamide

d. Isoniazid

e. Heparin

376. Conducting tissue cells are live and connected to the sieve tube elements. It is characteristic of:

a. Tracheids

b. Vessels

c. Collenchyma

d. Sclerenchyma

e. Companion cells

377. 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. Borrelia recurrentis

c. Salmonella typhi

d. Yersinia pestis

e. Streptococcus pyogenes

378. 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. Isomerases

b. Transferases

c. Ligases

d. Oxidoreductases

e. Lyases

379. 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. Transplantation

b. Explantation

c. Ionizing radiation

d. Hormone administration

e. Induction

380. 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. Excessive carbohydrate content

b. Excessive water content

c. Insufficient vitamin content

d. Insufficient protein content

e. Insufficient fat content

381. Potentiometry is one of the electrochemical methods of analysis. This method is based on measuring (determination) of:

a. Indicator electrode potential

b. Reference electrode potential

c. Diffuse layer potential

d. Zeta-potential

e. Systemic redox potential

382. 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. Acid-base catalysis
b. Autocatalysis
c. Heterogeneous catalysis
d. Enzymatic catalysis
e. Redox catalysis

383. A diuretic should be prescribed for treatment of cerebral edema. What drug is to be administered?

a. Spironolactone
b. Hydrochlorothiazide
c. Caffeine and sodium benzoate
d. Diacarb (Acetazolamide)
e. Furosemide

384. 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. H_2SO_4
b. CH_3COOH
c. HNO_3
d. HClO_4
e. HCl

385. 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. Pirenzepine
b. Famotidine
c. Allochol
d. Mebeverine
e. Omeprazole

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

387. What is the order of the kinetic equation that describes the process of coagulation according to the Smoluchowski theory of rapid coagulation?

a. First order
b. Third order
c. Second order
d. Fractional order
e. Zero order

388. 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. Sciophyte
b. Heliophyte
c. Xerophyte
d. Hydrophyte
e. Mesophyte

389. 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. Adhesion
c. Desorption
d. Wettability
e. Cohesion

390. 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. Diclofenac
d. Celecoxib
e. Ibuprofen

391. What factor of those named below is leading in developing symptom group characteristic of altitude sickness?

a. Daytime and nighttime temperature difference
b. Heavy physical exertion
c. Solar radiation
d. Speed of ascent
e. Decrease of oxygen partial pressure in air

392. Name the phenomenon when one drug weakens the effect of another drug:

a. Sensitization
b. Tolerance
c. Potentiation
d. Tachyphylaxis
e. Antagonism

393. 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. Pituitary hormone preparations
b. Anabolic steroids
c. Glucocorticoids
d. Thyroid hormone preparations
e. Mineralocorticoids

394. Choose the weakest carboxylic acid basing on its pKa value:

a. Lactic acid (pKa = 3.9)
b. Propionic acid (pKa = 4.9)
c. Acetic acid (pKa = 4.7)
d. Butyric acid (pKa = 4.82)
e. Formic acid (pKa = 3.7)

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

a. CH_3CH_2NH_2
b. CHequiv CH
c. CH_3COOH
d. CH_3CH_2SH
e. CH_3CH_2OH

396. Insulin production in beta-cells involves many substances. What substance gives the main signal for insulin synthesis when its concentration changes?

a. Glucose
b. Urea
c. Heparin
d. Carbon dioxide

e. Hemoglobin

397. 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. Macrophages

b. Helper T cells

c. B lymphocytes

d. NK cells

e. Suppressor T cells

398. Calendula officinalis as a representative of Asteraceae family can be characterized by the following type of inflorescence:

a. Catkin

b. Capitulum

c. Anthodium

d. Corymb

e. Umbel

399. 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. Aleukia

b. Agranulocytosis

c. Leukocytosis

d. Leukemia

e. Anemia

400. With which of the following compounds does propane react under the given conditions?

a. AlCl_3

b. Br_2, in the dark, 20^oC

c. Diluted H_2SO_4, 20^oC

d. SO_2 + Cl_2, in the dark

e. Br_2, in the light, 20^oC

401. 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. Fungi and bacteria

b. Viruses and rickettsia

c. Mycoplasma and rickettsia

d. Viruses and bacteria

e. Mycoplasma and viroids

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

a. Benzylpenicillin

b. Chloramphenicol

c. Sulfanilamide

d. Pancreatin

e. Lovastatin

403. 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. Mechanism by which the chemical change occurs

c. Route by which the chemical change occurs

d. Initial and final state of system

e. Number of intermediate stages

404. 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. Inhibition of histamine H1 receptors
b. Inhibition of histamine H2 receptors
c. Decrease of leukotriene release
d. Block of leukotriene D4 receptors
e. Antiserotonin activity

405. What pharmacological effect of acetylsalicylic acid allows its application in patients with ischemic heart disease for prevention of thromboses?

a. Antiaggregant
b. Analgesic
c. Antipyretic
d. Anti-inflammatory
e. Ulcerogenic

406. What titrimetric method of analysis is used for the quantification of calcium chloride?

a. Permanganatometry, direct titration
b. Nitritometry, direct titration
c. Cerimetry, direct titration
d. Permanganatometry, back titration
e. Acidimetry, back titration

407. 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. Schistocytes
b. Drepanocytes
c. Microcytes
d. Annulocytes (Codocytes)
e. Reticulocytes

408. 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. Ceruloplasmin
b. Transferrin (siderophilin)
c. Transcobalamin
d. Albumin
e. Haptoglobin

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

a. NaOH, H_2O
b. HNO_3, p, t
c. H_2, Ni, t
d. K_2Cr_2O_7, H^+
e. H_2O, Hg^2+, H^+

410. 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 guanosine monophosphate
b. Synthesis of glycerol monophosphate
c. Synthesis of thymidine monophosphate
d. Synthesis of adenosine monophosphate
e. Synthesis of glucose monophosphate

411. 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. Genetic recombination
b. RNA processing
c. DNA replication
d. Biosynthesis of proteins
e. DNA repair

412. 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

413. The isoelectric point of a protein is 5.7. At what pH value does the protein macroion move to the anode?
a. 5.0
b. 4.7
c. 5.7
d. 4.0
e. 7.0

414. Having prepared a nutrient medium with carbohydrate solutions, the laboratory assistant sterilized it. What sterilization method was used?
a. One-time boiling
b. Steam under pressure
c. Ultraviolet irradiation
d. Dry heat
e. Fractional, using flowing steam

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

416. A solution being analyzed contains ammonium and sodium cations. What reagent can detect sodium cations in this solution?
a. Potassium hydrotartrate
b. Potassium tetraiodomercurate(II)
c. Uranyl zinc acetate
d. Potassium benzoate
e. Potassium oxalate

417. 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. A change in the concentration of products
b. Pressure change
c. A change in the concentration of the initial substances
d. Temperature change
e. Addition of a catalyst

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

419. 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. Non-absorption of iron in the body
b. Vitamin B_12 deficiency
c. Iron loss due to bleeding
d. Increased iron consumption
e. Insufficient iron intake with food

420. 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. Osmophor
b. Sticky hair
c. Glandular hair
d. Nectary
e. Hydathode

421. Potentiometric methods of analysis are based on the use of:
a. Dependence of the mass of the precipitate on the concentration of the analyte
b. Dependence of the electric current on the concentration of the analyte
c. Dependence of the volume of the titrant 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 volume of the produced gas on the concentration of the analyte

422. Mantoux skin test is used to screen school children for infection with Mycobacterium tuberculosis. What testing agent is necessary for this procedure?
a. Tuberculin
b. BCG vaccine
c. Brucellin
d. Anti-anthrax vaccine (STI)
e. Anthraxinum

423. Electrokinetic potential is a parameter that measures the charge of proteins, leukocytes, and erythrocytes. At what interface is the electrokinetic potential generated?
a. Core-adsorption layer
b. Aggregate-potential-determining ions
c. Micelle-dispersion medium
d. Core-diffuse layer
e. Granule-diffuse layer

424. 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. Phenolphthalein
b. Eriochrome black T
c. Iron(III) thiocyanate
d. Methyl orange
e. Murexide

425. A patient with gingivitis was prescribed oral cavity irrigation with 0.02% potassium permanganate solution. What group of antiseptics does this drug belong to?
a. Nitrofurans
b. Alcohols

c. Dyes
d. Detergents
e. Oxidants

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

427. Allopurinol is used to treat gout. What is the mechanism of action of this drug?
a. Xanthine oxidase activator
b. Competitive inhibitor of xanthine oxidase
c. Activator of purine nucleotide catabolism
d. Inhibitor of purine nucleotide synthesis
e. Xanthine oxidase coenzyme

428. What analytical effect is observed during fixation of the end point in the Volhard titration?
a. A brown precipitate is produced
b. The solution colors yellow
c. The solution colors red
d. A red precipitate is produced
e. A yellow precipitate is produced

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

430. A pharmacy has received a batch of drugs for treatment of upper respiratory tract infection. What drug is used to treat influenza?
a. Levamisole
b. Methisazone
c. Doxycycline
d. Idoxuridine
e. Rimantadine

431. Which one of the listed drugs can be used to treat candidiasis?
a. Doxycycline
b. Ceftriaxone
c. Clindamycin
d. Nystatin
e. Azithromycin

432. What method of titrimetric analysis is used to quantify streptocide (sulfanilamide) with a KBrO_3 solution in the presence of KBr?
a. Bromatometry
b. Permanganometry
c. Iodometry
d. Vanadatometry
e. Dichromatometry

433. 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. Ziehl-Neelsen

b. Loeffler

c. Romanowsky-Giemsa

d. Gram

e. Ozheshko

434. 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. Fatty oil

b. Glycogen

c. Protein

d. Starch

e. Inulin

435. 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. Cachexin

c. Insulin

d. Glucagon

e. Somatotropin

436. 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. Sodium bicarbonate

b. Codeine phosphate

c. Sodium chloride

d. Libexin (Prenoxdiazine)

e. Ambroxol

437. Which of the following compounds is a complex ether (an ester)?

a. C_15H_31COOH

b. C_2H_5OH

c. CH_3-O-C_2H_5

d. CH_3-O-CH_3

e. CH_3COOCH_3

438. 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^+ (acid medium)

b. Ag^+ (neutral medium)

c. Ag^+ (ammonia buffer medium)

d. Ag^+ (alkaline medium)

e. Ba^2+ (alkaline or neutral medium)

439. What bacteria indicate the presence of fecal contamination?

a. Anthracoids

b. Klebsiella

c. Serratia

d. Sarcina

e. Escherichia coli

440. What titrant is used in bromatometric titration?

a. KBrO_4

b. Br_2

c. KBr

d. KBrO_3

e. KBrO_4 + KCl

441. Althaea officinalis root assumes a marked blue hue on section when processed with methylene blue, which indicates the presence of:
a. Lipids
b. Glycogen
c. Inulin
d. Mucus
e. Starch

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

443. 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. Fragaria vesca
c. Rubus idaeus
d. Pyrus communis
e. Rosa canina

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

445. 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. Urobilinogen
b. Bile acids
c. Conjugated bilirubin
d. Stercobilinogen
e. Unconjugated bilirubin

446. What titrimetric method of analysis requires the use of both external and internal indicators?
a. Permanganatometry
b. Complexometric titration
c. Argentometry
d. Alkalimetry
e. Nitritometry

447. What indicators are used to determine the titration endpoint in the acid-base titration method?
a. pH indicators
b. Redox indicators
c. Adsorption indicators
d. Luminescent indicators
e. Metal indicators

448. 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. Hemoglobin
c. Insulin

d. Adrenaline
e. Urea

449. When a mixture of electrolytes is added into a sol, one of them reduces the effect of another. Name this phenomenon:
a. Additivity
b. Rheopexy
c. Antagonism
d. Phoresis
e. Synergism

450. 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. Collodion film
b. Glass
c. Gelatine
d. Biological membrane
e. Parchment

451. To relieve dry cough, a patient with bronchitis was prescribed a drug that is an alkaloid of yellow horned-poppy. Name this drug:
a. Codterpin
b. Codeine phosphate
c. Glaucine hydrochloride
d. Oxeladin
e. Libexin (Prenoxdiazine)

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

453. The patient's diuresis decreased to 800 mL per 24 hours. Such change in urine output is called:
a. Leukocyturia
b. Anuria
c. Oliguria
d. Proteinuria
e. Polyuria

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

455. 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. Skeletal muscles
d. Stomach
e. Brain

456. A 28-year-old patient has a subfebrile fever. This type of fever is observed when body temperature fluctuates within the following range:

a. 38--39^oC
b. 36.6--37^oC
c. 37--37.9^oC
d. Over 41^oC
e. 39--41^oC

457. Acetylsalicylic acid is used in treatment of rheumatism. What biochemical links are affected by acetylsalicylic acid?

a. Stimulates cholesterol synthesis
b. Stimulates prostaglandines synthesis
c. Inhibits prostaglandines synthesis
d. Stimulates gluconeogenesis
e. Inhibits glycolysis

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

a. Methionine
b. Phenylalanine
c. Glutamine
d. Tryptophan
e. Histidine

459. What pathologies facilitate cumulation of drugs?

a. Diseases of locomotor apparatus
b. Diseases of respiratory tracts
c. Diseases of CNS
d. Diseases of connective tissue
e. Diseases of liver and kidneys

460. To choose an indicator for acid-base titration, a titration curve needs to be built. This curve reflects the dependence of:

a. Solution pH from the concentration of the added titrant solution
b. Solution pH from the volume of the added titrant
c. Concentration of the analyzed compound from solution pH
d. Solution pH from the temperature
e. Solution pH from the volume of the solution being analyzed

461. 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. Histamine
b. Cathepsin
c. Tissue hyaluronidase
d. Prostaglandin E2
e. Complement component C3a

462. 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. Pyrimidine nucleotides
b. Cholesterol
c. Bile acids
d. Glucose
e. Ketone bodies

463. 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. Sarcina
b. Fungi and yeasts
c. Chromobacterium
d. Staphylococcus and streptococcus
e. Colibacillus

464. 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. B_12-folic acid deficiency
b. Hereditary hemolytic
c. Acquired hemolytic
d. Iron-deficiency
e. Chronic posthemorrhagic

465. 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. Protozoal
b. Helminthic
c. Viral
d. Microbioses
e. Fungal

466. According to the Smoluchowski theory of rapid coagulation, the coagulation process can be described using the following type of kinetic equation:
a. Zero-order equation
b. Third-order equation
c. Second-order equation
d. Fractional-order equation
e. First-order equation

467. 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. Ag^+
b. NO_3^-
c. OH^-
d. H^+
e. Cu^2+

468. 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. Treponema
c. Mycoplasma
d. Neisseria
e. Chlamydia

469. According to Hueckel's rule an organic compound will have aromatic properties if:
a. 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.
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 is only one substituent in the molecule
e. There are condensed nuclei in the molecule

470. 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. Temperature

b. Distribution coefficient

c. The amount of the substance being extracted

d. pH of the solution

e. The mass of the substance being extracted

471. 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. Pinaceae

b. Lamiaceae

c. Poaceae

d. Alliaceae

e. Convallariaceae

472. 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. Perfringens titer

b. Microbial number

c. Coli index

d. Coliphage titer

e. Enterococcus titer

473. Pastes are used in medicine to treat skin diseases. What type of disperse systems are they?

a. Aerosols

b. Emulsions

c. Suspensions

d. Powders

e. Foams

474. 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. Decarboxylation

b. Limited proteolysis

c. Addition of a metal cation

d. Phosphorylation

e. Transamination

475. 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. Atherosclerosis

b. Leukaemia

c. Jaundice

d. Arthrosis

e. Gout

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

a. Tetradynamous

b. Polyadelphous

c. Didynamous

d. Diadelphous

e. Monadelphous

477. 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 can be determined based on the substance taken in excess

b. Third order
c. Pseudomonomolecular order
d. The order would be the same as the molecularity
e. The order would be greater than the molecularity

478. 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. Actinomycetes
b. Treponema
c. Clostridia
d. Borrelia
e. Leptospira

479. What enzyme catalyzes the reaction of activation of amino acids and their attachment to a specific tRNA?
a. Deoxyribonuclease
b. Nucleotidase
c. Ribonuclease
d. DNA ligase
e. Aminoacyl-tRNA synthetase

480. "Protargol" and "collargol" colloidal silver preparations contain protein compounds besides their active substance. What is the function of proteins in these drugs?
a. Improved drug technology
b. Decreased side effects
c. Increased shelf life
d. Prevention of coagulation of the colloidal solution
e. Increased bactericidal effect of silver

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

482. A patient with heart failure has developed acute edematous syndrome. What drug should be prescribed to make the edemas recede?
a. Furosemide
b. Nifedipine
c. Propranolol
d. Nitroglycerine
e. Panangin (Potassium aspartate and magnesium aspartate)

483. A person with essential hypertension was prescribed lisinopril. What is the typical side effect of this medicine?
a. Increased appetite
b. Dry cough
c. Insomnia
d. Constipation
e. Vomiting

484. 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. Lactate dehydrogenase
b. Creatine kinase

c. Dihydrofolate reductase
d. Hexokinase
e. Xanthine oxidase

485. Microscopy of the patient's vaginal smear detected trichomonads. What antimicrobial drug must be prescribed for treatment in this case?
a. Clotrimazole
b. Metronidazole
c. Fluconazole
d. Biseptol (Co-trimoxazole)
e. Ethambutol

486. 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. Burri-Gins stain
b. Ozheshko stain
c. Morozov stain
d. Neisser stain
e. Romanowsky-Giemsa stain

487. What method is used for the quantification of magnesium sulfate solution for injections?
a. Acid-base titration
b. Cerimetry
c. Complexonometry
d. Iodine monochloride titration
e. Nitritometry

488. 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 hydropiper
b. Rumex confertus
c. Fagopyrum esculentum
d. Persicaria bistorta
e. Polygonum aviculare

489. 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 volume of the continuous medium
c. The mass of the comminuted substance
d. The shape of the particles
e. The nature of the dispersed material

490. 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. Thiamine bromide
b. Allopurinol
c. Proserin (Neostigmine)
d. Cyanocobalamin
e. Cholecalciferol

491. 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. Impaired lymphatic efflux
b. Increased permeability of the capillaries
c. Reduced oncotic pressure of blood
d. Decreased hydrostatic blood pressure in the capillaries

e. Increased oncotic pressure of tissue fluid

492. 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. Acetone bodies
b. Nucleotides
c. Urea
d. Fatty acids
e. Glucose

493. 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. Isadrine (Isoprenaline)
b. Epinephrine hydrochloride
c. Salbutamol
d. Clophelin (Clonidine)
e. Droperidol

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

495. 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 a cell wall
b. Absence of flagella
c. Absence of inclusions
d. Absence of a capsule
e. Absence of a spore

496. 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. Moistening
b. Wetting
c. Cohesion
d. Swelling
e. Adhesion

497. 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. Ion exchange chromatography
c. Gel chromatography
d. Distribution chromatography
e. Adsorption chromatography

498. Select a Brassicaceae family plant that contains glycosides similar in action to those obtained from foxglove:

a. Arctostaphylos uva-ursi
b. Erysimum canescens
c. Primula officinalis

d. Urtica dioica
e. Polygonum aviculare

499. A child diagnosed with rheumatism was hospitalized. What microorganisms cause this disease?
a. Enterococci
b. Pneumococci
c. Staphylococci
d. Meningococci
e. Streptococci

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

501. 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. High molecular weight
b. Rate of movement through the column
c. High thermal conductivity
d. Affinity for the stationary phase
e. Inert to the stationary phase and the substances being analyzed

502. 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. Sedimentation
c. Coagulation
d. Electrophoresis
e. Coalescence

503. 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. Diffusion
d. Stratification
e. Thixotropy

504. 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. Blastopathy
b. Chromosomal disorders
c. Fetopathy
d. Gametopathy
e. Molecular genetic disease

505. 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. Metoprolol
d. Fenoterol
e. Epinephrine

506. What groups of antibiotics can be classified as beta-lactam antibiotics?
a. Penicillins, cephalosporins, monobactams, carbapenems
b. Cephalosporins, monobactams, aminoglycosides
c. Cephalosporins, macrolides, aminoglycosides
d. Penicillins, cephalosporins, macrolides, carbapenems
e. Penicillins, cephalosporins, tetracyclines

507. The patient with parkinsonism has been prescribed a drug - dopamine precursor - to relieve muscular rigidity. Name this drug:
a. Atropine sulphate
b. Paracetamol
c. Aminazine
d. Scopolamine hydrobromide
e. Levodopa

508. What is the main substrate for eicosanoid synthesis in the human body?
a. Stearic acid
b. Palmitic acid
c. Caproic acid
d. Arachidonic acid
e. Oleic acid

509. 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. Platycladus orientalis cones
b. Aggregate fruits of alnus
c. Berry-like juniper cones
d. Larch cones
e. Cypress cones

510. In a maternity hospital infants are vaccinated against tuberculosis on the 5-7 day. What vaccine is used specifically for prevention of tuberculosis?
a. DPT vaccine
b. BCG vaccine
c. STI vaccine
d. EV vaccine
e. TABTe vaccine

511. 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. Hyperfunction of the adrenal cortex
b. Adenohypophyseal hyperfunction
c. Adenohypophyseal hypofunction
d. Hypothyroidism
e. Hyperparathyroidism

512. 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 viruses
d. Ampoule with staphylococcus culture
e. Ampoule with fungi spores

513. Fatty acids are being synthesized in human body. What compound is intial in this synthesis process?
a. Acetyl-CoA
b. Glycine

c. Vitamin C
d. Cholesterol
e. Succinate

514. 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. Actinomyces
b. Aspergillus
c. Candida
d. Penicillium
e. Mucor

515. Antidepressants can increase the content of catecholamines in the synaptic cleft. What is the mechanism of action of these drugs?
a. Activate aminotransferase
b. Activate decarboxylase
c. Inhibit aminotransferase
d. Inhibit monoamine oxidase
e. Inhibit xanthine oxidase

516. Among dosage forms there are numerous disperse systems. Select a free disperse system from the list:
a. Gel
b. Diaphragm
c. Membrane
d. Emulsion
e. Jelly

517. The secondary structure of eukaryotic DNA is a double helix. What bonds keep the strands of DNA molecule together?
a. Ester
b. Disulfide
c. Peptide
d. Glycosidic
e. Hydrogen

518. 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. Cephalosporins
b. Aminoglycosides
c. Penicillins
d. Macrolides
e. Tetracyclines

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

520. 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. Hemagglutination
b. Precipitation
c. Flocculation

d. Hemadsorption
e. Complement fixation

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

522. The study of the main root ontogenesis shows that it has developed from:
a. Apical meristem
b. Pericycle
c. Radicle
d. Lateral meristem
e. Intercalary meristem

523. Salicylic acid and its derivatives are widely used in medicine. This compound belongs to the following class of chemicals:
a. Aldehydes
b. Alcohols
c. Alkanes
d. Hydroxycarboxylic acids
e. Heterocyclic compounds

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

525. 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. Carcinogenicity
c. Embryotoxicity
d. Tolerance
e. Mutagenicity

526. Amperometric titration is used in analysis of some pharmaceutical preparations. The amperometric titration method is based on the following:
a. Ion exchange between the anionite and analyte solution
b. Determining the equivalence point by a sharp change in the diffusion current during the titration process
c. Measuring the cell voltage during the titration
d. Measuring the potential difference of the electrodes during the titration process
e. Ion exchange between the analyte solution and cationite

527. 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 passive
d. Artificial active
e. Natural passive

528. Fenofibrate belongs to the following pharmacological group:
a. Hypnotics
b. Hypolipidemic drugs
c. Indirect-acting anticoagulants
d. Antihypertensive drugs
e. Fibrinolysis inhibitors

529. 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. Insulin
b. Adrenaline
c. Somatotropin
d. Oxytocin
e. Vasopressin

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

531. 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. LDH
b. Amylase
c. Pepsin
d. Creatine kinase
e. Aldolase

532. Solutions of high-molecular compounds can be precipitated by concentrated electrolyte solutions. Name this process:
a. Coacervation
b. Peptization
c. Salting-out
d. Coagulation
e. Syneresis

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

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

535. 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. Spironolactone

b. Proserine (Neostigmine)
c. Ketamine
d. Metoprolol
e. Aceclidine

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

537. A characteristic reaction between sodium sulfide and the salts of an unknown cation has produced a white precipitate. What cation was it?
a. Zinc
b. Magnesium
c. Lead
d. Mercury
e. Copper

538. 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. 1000 bacteria and 200 mold fungi
b. 10 bacteria and no mold fungi
c. 100 bacteria and 10 mold fungi
d. No bacteria and no mold fungi
e. 1000 bacteria and 100 mold fungi

539. A patient has mucosal dryness and mesopic vision disorder. What vitamin deficiency causes these symptons?
a. C
b. P
c. E
d. A
e. D

540. The children attending a kindergarten were hospitalized with diagnosis of poliomyelitis. What was the route of infection transmission in this case?
a. Alimentary transmission
b. Transmission via airborne dust particles
c. Fecal-oral transmission
d. Direct contact transmission
e. Vector-borne transmission

541. What is the type of leaf attachment to the stem in Papaver somniferum?
a. Clasping
b. Auriculate
c. Sheathing
d. Ochreate
e. Perfoliate

542. What method of titrimetric analysis requires the use of both external and internal indicators?
a. Alkalimetry
b. Argentometry
c. Complexometric titration
d. Permanganatometry
e. Nitrite titration

543. 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. Lungs
c. Stomach
d. Cerebral cortex
e. Kidneys

544. 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. Hypotension, vertigo
b. Diarrhea, hepatitis
c. Euphoria, tolerance
d. Withdrawal, dependence
e. Hypertension, arrhythmia

545. 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. Thyrotoxicosis
b. Cushing's disease
c. Hypothyroidism
d. Addison's disease
e. Diabetes mellitus

546. 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. Fatty acids
b. Amino acids
c. Monosaccharides
d. Monohydric alcohols
e. Keto acids

547. A 71-year-old woman with cholecystitis has developed mechanical jaundice. What type of arrhythmia will develop in this case?
a. Ciliary arrhythmia
b. Atrioventricular block
c. Sinus bradycardia
d. Sinus tachycardia
e. Extrasystole

548. 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. Constriction of the coronary vessels
b. Dilation of the coronary vessels
c. Reduction of the myocardial oxygen demand
d. Reduction of the peripheral vessel tone
e. Increase of the myocardial oxygen demand

549. 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. Retinopathy
b. Fetopathy
c. Microangiopathy
d. Neuropathy
e. Macroangiopathy

550. 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. Vicasol (Menadione)

b. Fibrinogen
c. Ascorbic acid
d. Etamsylate
e. Aminocaproic acid

551. What antihistamine with marked sedative effect should be prescribed to be taken before bed?
a. Guttalax (Sodium picosulfate)
b. Fexofenadine
c. Dimedrol (Diphenhydramin)
d. Aerius (Desloratadine)
e. Loratadine

552. What method of microspecimen staining is used to detect Mycobacterium tuberculosis?
a. Ziehl-Nielsen stain
b. Neisser stain
c. Gram stain
d. Burri-Gins stain
e. Romanowsky-Giemsa stain

553. Primary and secondary nitroalkanes are tautomeric compounds. What tautomerism is characteristic of these compounds?
a. Keto-enol tautomerism
b. Amino-imino tautomerism
c. Tautomerism of azoles
d. Aci-nitro tautomerism
e. Lactam-lactim tautomerism

554. 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. Purulent
b. Serous
c. Catarrhal (mucous)
d. Fibrinous
e. Hemorrhagic

555. 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. Contact therapy
b. Hemosorption
c. Liquorosorption
d. Enterosorption
e. Lymphosorption

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

557. 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. Periderm
b. Endodermis
c. Mesodermis
d. Hypodermis
e. Ectodermis

558. Select from the list an adsorption indicator:
a. Eriochrome black T
b. Sulfosalicylic acid
c. Phenolphthalein
d. Methyl-orange
e. Eosin

559. What inflammatory mediator contributes to an increase in body temperature?
a. Thromboxane
b. Interleukin-1
c. Histamine
d. Serotonin
e. Bradykinin

560. A laboratory received ethanol and methanol. What reaction can be used to distinguish between these two substances?
a. Iodoform test (I_2 + NaOH)
b. Formation of a chelate complex with copper hydroxide
c. Beilstein test
d. Reaction with halogen anhydrides of inorganic acids
e. Oxidation (CrO_3, H_2SO_4)

561. 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

562. 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. Water
b. Chloroform
c. Acetic acid
d. Camphor
e. Benzene

563. What vitamin supplement is typically prescribed along with folic acid in cases of hyperchromic anemia?
a. Cyanocobalamin
b. Retinol
c. Fercoven
d. Thiamine
e. Pyridoxine

564. 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. Tularemia
b. Tuberculosis
c. Actinomycosis
d. Pertussis
e. Diphtheria

565. 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. Potassium chloride
b. Sodium chloride

c. Metallic iron
d. Metallic zinc
e. Sodium carbonate

566. The mixture being studied contains Mg^2+, Ni^2+, Hg^2+ cations. What reagent allows to detect Ni^2+ cations in the mixtire?
a. 1-Nitroso-2-naphthol
b. Alizarin
c. Magneson I (Azo violet)
d. Dimethylglyoxime
e. Ammonia solution

567. 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. Doxycycline hydrochloride
c. Azithromycin
d. Co-amoxiclav
e. Ciprofloxacin

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

569. 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. Growth tissue
b. Integumentary tissue
c. Strengthening tissue
d. Storage tissue
e. Conducting tissue

570. What type of colloidal systems are foams?
a. Liquid-solid
b. Solid-liquid
c. Liquid-liquid
d. Gas-gas
e. Gas-liquid

571. What substances given below are not surfactants?
a. Inorganic acids, bases, and their salts
b. Carboxylic acids and soaps
c. Aldehydes and alcohols
d. Amines and sulfonic acids
e. Alcohols and soaps

572. 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. Hydrolases
b. Isomerases
c. Synthetases
d. Oxidoreductases

e. Transferases

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

574. 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. Microcytes
b. Echinocytes
c. Reticulocytes
d. Megalocytes
e. Annulocytes

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

576. Specify the standard solution (titrant) for the iodometric determination of oxidants:

a. K_2Cr_2O_7
b. Na_2S_2O_3
c. KMnO_4
d. I_2
e. KBrO_3

577. Gout develops when purine nucleotide metabolism is disturbed. The doctor prescribed the patient allopurinol that is a competitive inhibitor of:

a. Succinate dehydrogenase
b. Lactate dehydrogenase
c. Hexokinase
d. Alcohol dehydrogenase
e. Xanthine oxidase

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

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

579. Name the titrimetric method for quantitative determination of phenol and its derivatives:

a. Cerimetry
b. Bromatometry
c. Nitritometry
d. Permanganatometry
e. Ascorbinometry

580. 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. Ovalocytes
b. Megalocytes
c. Normocytes
d. Annulocytes (codocytes)
e. Microcytes

581. What reagent allows to simultaneously detect aldehyde group and glycol fragment presence in glucose molecule?

a. KMnO_4
b. FeCl_3
c. AlCl_3
d. Cu(OH)_2
e. Br_2

582. 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. Patient's blood serum
b. Live pure culture of Salmonella
c. Erythrocytic salmonellosis diagnosticum
d. Salmonellosis diagnosticum
e. Agglutinating diagnostic serum for salmonellosis

583. The Wasserman test was positive in a 25-year-old woman. What disease can be diagnosed using this test?

a. Diphtheria
b. Tuberculosis
c. Brucellosis
d. Leptospirosis
e. Syphilis

584. 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 decrease by 27 times
b. The rate will remain unchanged
c. The rate will decrease by three times
d. The rate will increase by 27 times
e. The rate will increase by three times

585. In pine wood, essential oils accumulate in the passages that inside are lined with a layer of secretory cells. Name these structures:

a. Non-articulated laticifers
b. Glandules
c. Articulated laticifers
d. Schizogenous cavities
e. Lysigenous cavities

586. 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. Toxic shock syndrome toxin
b. Enterotoxin
c. Hemolysin
d. Hyaluronidase
e. Exfoliative toxin

587. 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. Hemagglutination inhibition assay
b. Ascoli precipitation test
c. Wasserman complement fixation test
d. Widal agglutination test
e. Immunofluorescence assay

588. 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-6-phosphate
b. Phosphoenolpyruvate
c. Glucose
d. Pyruvate
e. Lactate

589. In what taxonomic division is the gametophyte predominant over the sporophyte during the plant's life cycle?

a. Bryophyta
b. Lycopodiophyta
c. Polypodiophyta
d. Pynophyta
e. Magnoliophyta

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

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

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

592. What drug has an anxiolytic and anticonvulsant effect?

a. Aminazine (Chlorpromazine)
b. Reserpine
c. Droperidol
d. Diazepam
e. Phenobarbital

593. After a subtotal gastric resection, the patient developed B_12-deficiency anemia. What cells in a blood smear are typical in this pathology?

a. Megaloblasts
b. Microcytes
c. Normoblasts
d. Erythroblasts
e. Anulocytes

594. Interleukin-1 is one of the secondary pyrogens in a fever. What cells are the main producers of this pyrogen?

a. Platelets
b. Eosinophils
c. Lymphocytes
d. Tissue basophils
e. Macrophages

595. Entropy, as one of the main thermodynamic functions, is a measure of:
a. Energy that can be used to perform work
b. Internal energy of a system
c. Enthalpy
d. Dissipated energy
e. Total energy of a system

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

597. 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. Venous hyperemia
b. Ischemia
c. Embolism
d. Thrombosis
e. Arterial hyperemia

598. 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, Hg_2(NO_3)_2
b. HCl, Hg(NO_3)_2
c. CH_3COOH, KOH
d. HCl, AgNO_3
e. HCl, NaOH

599. What standard solution can be used to standardize the solution of I_2?
a. Sodium thiosulfate solution
b. Sodium nitrite solution
c. Potassium dichromate solution
d. Potassium permanganate solution
e. Potassium iodide solution

600. 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. Benzylpenicillin
c. Ampicillin
d. Streptomycin
e. Ceftriaxone

601. 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. Inhibition of thromboxane A2 biosynthesis
b. Stimulation of synthesis of E1 prostaglandins
c. Inhibition of COX-2 enzyme activity
d. Reduction of synthesis of E2 prostaglandins
e. Inhibition of COX-1 enzyme activity

602. 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. Continuous

c. Remittent

d. Recurrent

e. Hectic

603. Ultraviolet irradiation is used in medicine in various physiotherapeutic procedures. What mechanism of medicinal action is characteristic of ultraviolet rays?

a. Activation of lipid peroxidation

b. Intensification of cell division

c. Activation of vitamin D synthesis

d. Decrease of melanin synthesis in the skin

e. Activation of drug action

604. 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. Lancet-shaped Gram-positive diplococci

d. Diplococci enclosed within a capsule

e. Gram-negative coccobacteria located inside leukocytes

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

a. Oxalic acid

b. P-aminobenzoic acid

c. Sulfosalicylic acid

d. Phenylacetic acid

e. Chloroacetic acid

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

a. Anesthesin (Benzocaine)

b. Ultracaine

c. Bupivacaine

d. Lidocaine hydrochloride

e. Ropivacaine

607. 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. Respiratory

b. Exogenic

c. Hemic

d. Circulatory

e. Tissue

608. 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. Inhibition of tissue esterases

c. Vasodilation

d. Vasoconstriction

e. Potentiation of novocaine (procaine) action at the level of central nervous system

609. A 60-year-old man with heart failure has received a cardiotonic that is a beta_1 adrenergic agonist. Name this drug:

a. Papaverine

b. Salbutamol

c. Xenical (Orlistat)
d. Dobutamine
e. Potassium aspartate and magnesium aspartate

610. 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. Renin
b. Cortisol
c. Vasopressin
d. Noradrenaline
e. Thyroxin

611. Medicinal plants infected by microorganisms cannot be used in pharmaceutical industry. Invasive properties of phytopathogenic micro-organisms are due to the following enzymes:
a. Isomerase
b. Transferase
c. Lyase
d. Hydrolytic
e. Oxidoreductase

612. 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. Tachyphylaxis
b. Cumulation
c. Antagonism
d. Incompatibility
e. Synergism

613. 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. Vasopressin
b. Thyroxine
c. Prolactin
d. Adrenaline
e. Somatotropin

614. Koch's bacillus was detected in the sputum of the patient with pulmonary tuberculosis. In this patient tuberculosis bacillus assumes the following role:
a. Condition hampering the disease development
b. Disease development condition
c. Condition conducive to the disease development
d. Causative agent of the disease
e. Risk factor of the disease

615. Emulsions are thermodynamically unstable. In them, the droplets of dispersed phase merge together spontaneously, causing the emulsion to stratify. Name this phenomenon:
a. Wetting
b. Deformation
c. Coalescence
d. Contraction
e. Solubilization

616. 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. Triglycerides
b. Cholesterol esters
c. Phospholipids

d. Glycolipids

e. Waxes

617. 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. Aminoglycosides

b. Glucocorticoids

c. Penicillins

d. Tetracyclines

e. Macrolides

618. A patient with signs of cardiac glycosides intoxication was prescribed Unithiol. What is the mechanism of drug action in this case?

a. Binding of ionized Ca^2+

b. Induction of cardiac glycoside metabolism

c. Reactivation of membrane K^+, Na^+ -adenosine triphosphatase

d. Increased Na^+ content in the myocardium

e. Increased inflow of K^+ to cardiomyocytes

619. 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. Scarlet fever

b. Tuberculosis

c. Infectious mononucleosis

d. Pneumonia

e. Diphtheria

620. 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. Freezing point

c. Light scattering

d. Saturated vapor pressure

e. Osmotic pressure

621. 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. Diabetes insipidus

b. Diabetes mellitus

c. Acute renal failure

d. Chronic renal failure

e. Hypothyroidism

622. 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 hypochromia

b. Erythrocyte hyperchromia

c. Hypovolemia

d. Dyslipidemia

e. Hyperglycemia

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

a. Acetic acid

b. Propanone

c. Ethanal
d. Propanal
e. Ethanol

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

625. Heparin is a potent natural anticoagulant, synthesized in mast cells. What is the chemical nature of this compound?
a. Heteropolysaccharide
b. Simple protein
c. Steroid
d. Phospholipid
e. Homopolysaccharide

626. Mycorrhiza on the oak roots is a symbiosis of:
a. Bacterium and higher plant
b. Fungus and bacterium
c. Fungus and alga
d. Fungus and higher plant
e. Two different bacteria

627. What product is formed during the Wagner reaction, when alkenes are being oxidired with potassium permanganate in an aqueous medium?
a. Epoxide
b. Carboxylic acid
c. Aldehyde
d. Ketone
e. Glycol

628. Serology is the main method of congenital toxoplasmosis diagnostics. What reaction is used to diagnose this pathology?
a. Precipitation
b. Neutralization
c. Bacteriolysis
d. Agglutination
e. Complement fixation

629. 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. Viruses
b. Rickettsia
c. Staphylococcus
d. Mycobacteria
e. Meningococcus

630. 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. Syneresis
b. Sedimentation
c. Synergism
d. Solubilization
e. Sensitization

631. What sanitary-indicative microorganisms are used for the assessment of the microbial contamination levels of potable water?

a. Staphylococcus aureus
b. Candida albicans
c. Escherichia coli
d. Streptococcus viridans
e. Clostridium perfringens

632. A patient developed anaphylactic shock after administration of lidocaine. What antibodies cause the development of this allergic reaction?

a. IgD
b. IgE
c. IgG
d. IgM
e. IgA

633. 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. Thermophiles
b. Resident
c. Psychrophiles
d. Mesophiles
e. Facultative

634. 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

635. What disaccharide is a reducing one?

a. Starch
b. Ribose
c. Cellulose
d. Sucrose
e. Maltose

636. 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. Thixotropy
b. Dialysis
c. Micelle formation
d. Syneresis
e. ''Colloidal protection''

637. To treat glaucoma a doctor made a decision to prescribe a cholinomimetic agent of direct action. Name this drug:

a. Atropine sulfate
b. Platyphylline hydrotartrate
c. Pilocarpine hydrochloride
d. Zinc sulfate
e. Sulfacyl-sodium (Sulfacetamide)

638. Formation enthalpy equals zero for the following substance:

a. H_2O_2

b. CO_2
c. H_2SO_4
d. O_2
e. $CaCO_3$

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

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

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

642. 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. Cellulose
b. Starch
c. Glycogen
d. Chondroitin sulfate
e. Chitin

643. Amino acids can participate in a large number of metabolic processes. What amino acid functions as a donor of methyl groups ($-CH_3$)?
a. Isoleucine
b. Leucine
c. Methionine
d. Valine
e. Tryptophan

644. Laboratories of various specialization use the following method to determine general water hardness of potable water:
a. Alkalimetry
b. Precipitation
c. Complexometric titration
d. Acidimetry
e. Oxidimetry

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

646. Which alkadiene of those listed below is a diene with cumulated double bonds?
a. CH_2 = CH - CH_2 - CH = CH_2
b. CH_2 = CH - CH_2 - CH_2 - CH = CH_2
c. CH_2 = C = CH_2
d. CH_2 = CH - CH = CH_2
e. CH_3 - CH = CH - CH_2 - CH = CH_2

647. 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. Complement binding
d. Bacteriolysis
e. Precipitation

648. 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. Corymb
b. Flat capitulum
c. Spike
d. Umbel
e. Raceme

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

650. 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. Druse crystals
b. Single crystals
c. Crystal sand
d. Raphides
e. Styloid crystals

651. 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 crop
b. Rhizome
c. Main root
d. Root tuber
e. Underground stolon

652. 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. Respiratory hypoxia
b. Hypoxic hypoxia
c. Blood hypoxia
d. Circulatory hypoxia
e. Tissue hypoxia

653. Bacterioscopic examination of chancre material revealed some mobile, long, convoluted

microorganisms with 8-12 regular coils. These features are typical for:
a. Vibrios
b. Treponema
c. Leptospira
d. Borrellia
e. Campylobacter

654. 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. Phenylalanine
c. Glucose
d. Serine
e. Cholesterol

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

656. 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. Glycogen
b. Lactose
c. Raffinose
d. Starch
e. Sucrose

657. 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. Alpha-blockers
e. Calcium ion antagonists

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

659. 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. Aesculus hippocastanum
c. Hipericum perforatum
d. Datura stramonium
e. Papaver somniferum

660. 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. Cyme

b. Catkin
c. Head
d. Panicle
e. Capitulum

661. A patient has thyrotoxicosis. What drug should be prescribed to this patient to suppress the synthesis of thyroid hormones?
a. Parathyroidin
b. Mercazolil (Thiamazole)
c. L-thyroxine
d. Antistrumin (Potassium iodide)
e. Thyroidin

662. A patient with essential hypertension is prescribed captopril. What is the mechanism of action of this drug?
a. alpha-adrenoceptor block
b. Inhibition of angiotensin-converting enzyme activity
c. Angiotensin II receptor block
d. Slow calcium channel block
e. beta-adrenoceptor block

663. 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. Adrenaline
b. Urates (uric acid salts)
c. Glucose
d. Phenylalanine
e. Cholesterol

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

665. Bacterial enzymes typically exhibit a high specificity of their action. In practice, this feature of bacterial enzymes is used for:
a. Bacteria cultivation
b. Bacteria serotyping
c. Bacteria identification
d. Immunoglobulin production
e. Bacteria phage typing

666. 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. Coli titer
c. Perfringens index
d. Microbial count
e. Perfringens titer

667. Calcium carbonate crystals are deposited as clusters on the inner protrusions of a cell wall. What are these formations called?
a. Druses
b. Cystoliths
c. Raphides

d. Styloids
e. Druses attached to cell membrane

668. What medium is necessary for determining the halide ions argentometrically using the Volhard method?
a. Strong alkaline medium
b. Acetic acid medium
c. Nitric acid medium
d. Neutral medium
e. Weak alkaline medium

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

670. 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. Botulism
b. Salmonellosis
c. Shigellosis
d. Escherichiosis
e. Cholera

671. What substance is used as a primary standard in permanganometry, bromatometry, dichromatometry, iodometry, and cerimetry?
a. Arsenic(III) oxide
b. Ammonium acetate
c. Potassium hydroxide
d. Sodium carbonate
e. Sodium chloride

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

673. 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. Malus sylvestris
c. Pyrus communis
d. Cerasus vulgaris
e. Prunus armeniaca

674. Suppositories are widely used in medicine. What requirement should their aggregative stability meet?
a. Must be solid
b. Must be non-volatile
c. Must not disintegrate
d. Melting point of 37^oC
e. Must not dissolve

675. 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. Verticillate
b. Cross-opposite
c. Rosette
d. Leaf mosaic
e. Spiral

676. A 45-year-old patient with rheumatoid arthritis was prescribed a glucocorticoid. Name this drug:
a. Mefenamic acid
b. Ibuprofen
c. Analgine (Metamizole)
d. Prednisolone
e. Insulin

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

678. An elderly patient has developed postoperative intestinal atony. What anticholinesterase drug should be prescribed?
a. Dithylinum (Suxamethonium chloride)
b. Metoprolol
c. Proserin
d. Pilocarpine hydrochloride
e. Atropine sulfate

679. The 55-year-old patient has been diagnosed with angina pectoris. Calcium channel-blocking agent was prescribed for treatment. Name this agent:
a. Guanethidine
b. Labetalol
c. Amlodipine
d. Atenolol
e. Reserpine

680. Chlorophyta division representatives have chromatophores of various shapes in their cells. What genus includes species with ribbon-shaped chromatophores?
a. Spirulina
b. Chlorella
c. Spirogyra
d. Volvox
e. Chlamidomonas

681. 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. Ligulate
b. Saucer-shaped
c. Tubular
d. Funnelform
e. Papilionaceous

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

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

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

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

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

686. 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. Ethacrynic acid
d. Omeprazole
e. Fenofibrate

687. 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. Gamma-aminobutyric acid
b. Methylamine
c. Sulfanilic acid
d. Uric acid
e. Salicylic acid

688. A patient with hyperproduction of thyroid hormones has been prescribed Merkazolilum. This drug inhibits the following enzyme of iodothyronine synthesis:
a. Reductase
b. Aminotransferase
c. Aromatase
d. Iodide peroxidase
e. Decarboxylase

689. 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. Sulfalene
b. Gentamicin
c. Ofloxacin
d. Benzylpenicillin
e. Levomycetin (Chloramphenicol)

690. Select the hepatoprotective drugs from the list below:
a. Oxaphenamide (Osalmid), Nicodin
b. Essentiale (Phospholipides), Thiotriasoline
c. Festal, Panzinorm (Pancreatin)
d. Allochol, Cholenzym
e. No-Spa (drotaverine), papaverine hydrochloride

691. What drug is indicated in case of an overdose of depolarizing muscle relaxants?
a. Prozerin (Neostigmine)
b. Unithiol
c. Naloxone
d. Metoprolol
e. Magnesium sulfate

692. What substance is a unique accumulator, donor, and transformer of energy within the body?
a. Acetyl-CoA
b. Creatine phosphate
c. Adenosine triphosphate
d. Phosphoenolpyruvate
e. Succinyl-CoA

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

694. Potassium dichromate solution is to be analyzed. What physicochemical method of analysis will be used to determine its concentration?
a. Fluorimetry
b. Conductometric titration
c. Coulometry
d. Polarimetry
e. Spectrophotometry

695. 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. Suppressor T cells
b. Killer T cells
c. Helper T cells
d. Macrophages
e. B lymphocytes

696. What geometrical shape does methane molecule have?
a. Planar
b. Linear
c. Triangular
d. Spherical
e. Tetrahedral

697. 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. Hippophae rhamnoides
b. Rhamnus cathartica
c. Sambucus nigra
d. Rosa canina
e. Crataegus sanguinea

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

699. Amino acids and their derivatives function as neurotransmitters in brain neurons. What neurotransmitter forms from an aromatic amino acid?
a. Leucine
b. Taurine
c. Dopamine
d. Methionine
e. Glycine

700. 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. Schizandra chinensis
b. Ephedra distachya
c. Humulus lupulus
d. Juniperus communis
e. Alnus glutinosa

701. What antibiotic is used for treatment of syphilis?
a. Streptomycin
b. Kanamycin
c. Nystatin
d. Amphotericin
e. Benzylpenicillin

702. 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. Pus
b. Glucose
c. Bilirubin
d. Acetone
e. Protein

703. 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. Genetically engineered vaccine
c. Chemical
d. Anatoxin
e. Inactivated

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

705. 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 initiation
b. Replication initiation

c. Translation termination
d. Transcription termination
e. Translation initiation

706. To stimulate birth activity, a certain neurohypophyseal hormone is used. Name this hormone:
a. Glucagon
b. Oxytocin
c. Thyroxine
d. Testosterone
e. Insulin

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

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

709. 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. Intestinal arteries
b. Coronary arteries
c. Renal arteries
d. Cerebral arteries
e. Lower limb arteries

710. 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

711. Permanganatometry is used in determination of many organic and inorganic compounds. What are the main advantages of permanganatometry over the other oxidimetric methods?
a. Various types of indicators can be used; in some cases catalysts are necessary to accelerate the reaction
b. Sufficiently high redox potential; it is possible to determine titration end-point without indicator
c. Sufficiently high stability of potassium permanganate and its solutions
d. High selectivity and sensitivity when determining compounds
e. Pure potassium permanganate is easily available and obtainable

712. 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. Hydrophytes

b. Xerophytes
c. Hygrophytes
d. Epiphytes
e. Mesophytes

713. 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. -
b. Cellular pressure
c. Oncotic pressure
d. Internal pressure
e. Biological pressure

714. Name the method of binding foreign ions in an analysis:
a. Analytical separation
b. Analytical extraction
c. Analytical coprecipitation
d. Analytical concentration
e. Analytical masking

715. 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. Ag^+ and NO_3^-
b. Ag^+
c. NO_3^-
d. AgCl
e. AgCl and Ag^+

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

717. Nitrite ions can be detected in the presence of nitrate ions using the following:
a. Diphenylcarbazone
b. Dimethylglyoxime
c. Crystalline iron (III) sulfate
d. Crystalline sodium thiosulfate
e. Crystalline antipyrine in the presence of diluted HCl

718. 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. Sulfuric acid
b. Trilon B (ethylenediaminetetraacetic acid tetrasodium salt)
c. Potassium dichromate
d. Sodium thiosulfate
e. Silver(I) nitrate

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

e. Oleum

720. The titrant of mercurimetry method is:
a. 0,1mol solution of KSCN
b. 0,1mol solution of NaNO_2
c. 0,1mol solution of AgNO_3
d. 0,1mol solution of NH_4SCN
e. 0,1mol solution of Hg_2(NO_3)_2

721. 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. Benzoteph
b. Doxorubicin
c. Tetracycline
d. Interferon
e. Carvedilol

722. What parameter determines the coagulating power of an electrolyte?
a. Sol density
b. Sol dispersion degree
c. Charge of the coagulator ion
d. Sol volume
e. Electrolyte concentration

723. What reaction must be conducted by an analytical chemist during the preliminary tests to determine chromium(III) ions?
a. Reaction with potassium permanganate
b. Reaction with ammonia
c. Reaction for formation of a perchromic acid after preliminary oxidation of chromium
d. Reaction with sodium hydroxide and hydrogen peroxide
e. Reaction with sodium hydroxide

724. 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

725. What is the generative reproductive organ of gymnosperms and angiosperms?
a. Flower
b. Seed
c. Fruit
d. Strobilus
e. Macro- and microspores

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

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

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

728. 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. Arabinose
d. Glycogen
e. Starch

729. Chromatographic analysis methods differ in their mechanism of sorbent-sorbate interaction. What partition mechanism is used in ion-exchange chromatography?
a. Different adsorption capacity of the solid sorbent towards different substances
b. Solutes and sorbent producing precipitates of different solubility
c. Different ion-exchange capacity of the substances
d. Different solubility of the solutes in the stationary phase
e. Production of coordination compounds of different stability in the phase or on the sorbent surface

730. Blood contains erythrocytes with sizes of 10^-6 m degree as its constituent parts. What type of disperse system is blood?
a. Heterogeneous
b. Colloidal dispersion
c. Coarse dispersion
d. Microheterogeneous
e. Homogeneous

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

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

733. 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. Prostaglandin E
b. Regeneration of the gastric mucosal epithelium
c. Adequate blood supply to the gastric mucosa
d. Intestinal mucosal barrier
e. Helicobacter pylory

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

d. Rosaceae

e. Brassicaceae

735. A solution containing calcium and magnesium cations is titrated with Trilon B solution. Complexometric titration of these cations requires the following medium:

a. Neutral medium

b. Acidic solution

c. Formate buffer solution

d. Ammonium buffer solution

e. Acetate buffer solution

736. 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. Sedimentation potential

b. Streaming potential

c. Electroosmosis

d. Brownian motion

e. Electrophoresis

737. 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. Retabolil (Nandrolone)

c. Ethamide

d. Oxytocin

e. Insulin

738. 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. Alanine transaminase

d. Lactate dehydrogenase

e. Adenosine deaminase

739. 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. Dialysis

c. Ultrafiltration

d. Compensatory dialysis

e. Electrodialysis

740. What forms of erythrocytes will be observed in a case of B_12 deficiency anemia?

a. Microcytes

b. Normocytes

c. Annulocytes (Codocytes)

d. Megalocytes

e. Ovalocytes

741. Name the initial compound for the synthesis of phthalic acid:

a. 1,2-Dichlorobenzene

b. m-Xylene

c. 2-Chlorobenzoic acid

d. Salicylic acid

e. o-Xylene

742. 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. Infectious myocarditis
c. Pulmonary emphysema
d. Primary hypertension
e. Mitral stenosis

743. The following belongs to high-concentration suspensions:
a. Foams
b. Pastes
c. Powders
d. Ointments
e. Creams

744. What type of solutions can be used as infusion solutions?
a. Colloid
b. Hypotonic
c. Ideal
d. Hypertonic
e. Isotonic

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

746. 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. Number of mold and yeast fungi
c. Total number of bacteria
d. Presence of E) coli
e. Presence of Salmonella

747. A patient with gout was prescribed allopurinol - a competitive inhibitor of xanthine oxidase. Xanthine oxidase is a terminal enzyme of catabolism of:
a. Phospholipids
b. Purine nucleotides
c. Glycoproteins
d. Higher fatty acids
e. Heteropolysaccharides

748. 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. Broad spectrum antibacterial agents
b. Antituberculous agents
c. Antiviral agents
d. Broad spectrum antifungal agents
e. Narrow spectrum antibacterial agents

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

e. The use of substances that kill pathogenic microbes in the internal environment of the body

750. 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. Acidimetry
c. Permanganatometry
d. Iodometry
e. Argentometry

751. Some leaf cells have lignified membranes. These cells are called:
a. Trichomes
b. Collenchyma
c. Sclereids
d. Companion cells
e. Sieve tubes

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

753. Chromatographic methods can be classified by the mechanism of the separation process. What type of chromatography is gas-liquid chromatography?
a. Ion-exchange chromatography
b. Affinity chromatography
c. Gel-filtration chromatography
d. Distribution chromatography
e. Adsorption chromatography

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

755. 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. Collagen
b. Myosin
c. Keratin
d. Actin
e. Albumin

756. In potentiometric titration the following indicator electrode is used for chloride and borate acids quantitative determination in their mixture:
a. Platinum
b. Glass
c. Silver
d. Calomel
e. Silver-chlorine

757. A patient with acute myocardial infarction received anticoagulation therapy. What compound will have anticoagulation effect?
a. Hyaluronic acid
b. Chondroitin sulfate

c. Keratan sulfate
d. Dermatan sulfate
e. Heparin

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

759. A quantity of medicine expressed in units of mass (milligram, gram), volume, or bioactivity (units of activity) is called:
a. Dosage form
b. Therapeutic index
c. Effectiveness
d. Dose
e. Speed of action

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

761. 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. Atherosclerosis
b. Obstructive jaundice
c. Jaundice of the newborn
d. Hepatocellular jaundice
e. Hemolytic jaundice

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

763. 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. Antimony(III)
c. Iron(III)
d. Manganese(II)
e. Bismuth(III)

764. What drug selectively suppresses the secretion of the gastric glands by blocking H_2-histamine receptors?
a. Ipratropium bromide

b. Famotidine
c. Omeprazole
d. Atropine sulfate
e. Loratadine

765. 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. Carrier gas
c. Solid carrier
d. Water
e. Organic solvent

766. What product forms as a result of a reaction between aniline and benzaldehyde?
a. Hemiacetal
b. N-benzylideneaniline
c. Oxime
d. N,N-dimethylaniline
e. Cyanohydrin

767. What is the name of the lower expanded hollow part of the pistil that contains ovules in a flower?
a. Stigma
b. Style
c. Gynoecium
d. Receptacle
e. Ovary

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

769. 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. Mumps vaccine
c. Influenza virus vaccine
d. Rubella virus vaccine
e. Poliovirus vaccine

770. 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. Methylphenyl ether
b. o-Cresol
c. Benzyl alcohol
d. p-Cresol
e. m-Cresol

771. Corn stalks typically have adventitious roots in their lower parts. These roots combine the functions of:
a. Nutrition and respiration
b. Retraction or contraction
c. Respiration and assimilation
d. Nutrition and support
e. Assimilation and absorption

772. What method is used to destroy an emulsion?
a. Emulsification
b. Centrifugation
c. Homogenization
d. Dispersion
e. Condensation

773. 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. Fluorescein
c. Diphenylcarbazone
d. Eosin
e. Potassium dichromate

774. A woman is to be prescribed a narcotic analgesic for labor pain relief. What drug is indicated in this case?
a. Morphine
b. Codeine
c. Promedol (Trimeperidine)
d. Fentanyl
e. Papaveretum (Omnopon)

775. 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. Photosensitization
b. Peripheral edemas
c. Arterial hypertension
d. Uricosuria
e. Hypercapnia

776. 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. Adrenaline hydrochloride
b. Salbutamol
c. Clonidine
d. Isadrine (Isoprenaline)
e. Droperidol

777. 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. Stimulation of alpha_1-adrenoceptors of the uterus
b. Direct antispasmodic effect
c. Stimulation of beta_2-adrenoceptors of the uterus
d. Stimulation of beta_2- and alpha_1-adrenoceptors of the uterus
e. Blocking beta_2-adrenoceptors of the uterus

778. Name the process when a dissolved macromolecular compound is sedimented by adding electrolytes into the solution:
a. Coacervation
b. Salting out
c. Flocculation
d. Jelly formation
e. Denaturation

779. 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. Theophylline

b. Spironolactone
c. Paracetamol
d. Furosemide
e. Asparcam

780. What method is used for simultaneous elimination of the effect of foreign substances, concentration, and determination of concentration?
a. Refractometry
b. Fluorimetry
c. Polarimetry
d. Extraction-photometric analysis
e. Differential spectrophotometry

781. 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. Peptide
c. Ion interaction
d. Hydrogen
e. Hydrophobic

782. 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. Uric acid synthesis
b. Ornithine cycle
c. Cori cycle
d. Pentose phosphate pathway
e. Glycolysis

783. Aggression enzymes are characteristic of pathogenic microorganisms. Select one such aggression enzyme from the list.
a. Lecithinase
b. Transferase
c. Lactamase
d. Catalase
e. Lyase

784. 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. Methionine
b. Phenylalanine
c. Threonine
d. Valine
e. Alanine

785. 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. Stenotic
b. Biot's
c. Kussmaul's
d. Cheyne-Stokes'
e. Gasping

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

787. What antidote must be used in case of narcotic analgesics overdose?
a. Unithiol (Dimercaptopropansulfonate sodium)
b. Calcium chloride
c. Diazepam
d. Caffeine and sodium benzoate
e. Naloxone

788. 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. Glucolytic
b. Sucrolytic
c. Lactolytic
d. Fructolytic
e. Maltolytic

789. Paracetamol has antipyretic and analgesic effect. In the human body it is neutralized in the following organ:
a. Lungs
b. Intestine
c. Heart
d. Spleen
e. Liver

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. Acute diffuse glomerulonephritis
b. Chronic renal failure
c. Urolithiasis
d. Acute pyelonephritis
e. Acute renal failure

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

792. 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. Ozheshko stain
b. Ziehl-Neelsen stain
c. Gram stain
d. Neisser stain
e. Burri-Gins stain

793. 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. Na^+
b. NO_3^-

c. NO_2^-
d. K^+
e. NH_4^+

794. 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. Immune complex
b. Anaphylactic
c. Delayed
d. Cytotoxic
e. Stimulating

795. A patient with bronchial asthma had been prescribed salbutamol, which led to disappearance of bronchiospasm symptoms. It happened due to stimulation of:
a. beta_1-adrenoreceptors
b. Acetylcholine synthesis
c. beta_2-adrenoreceptors
d. alpha_1-adrenoreceptors
e. Muscarinic acetylcholine receptors

796. 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 aureus
d. Staphylococcus saprophyticus
e. Staphylococcus epidermidis

797. Natural peptides can carry out various functions. What bioactive peptide is a major antioxidant and functions as a coenzyme?
a. Glutathione
b. Oxytocin
c. Liberin
d. Anserine
e. Bradykinin

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

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

800. 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. Half-wave potential
b. Refractive index

c. Wavelength
d. Specific rotation
e. Optical density

801. 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. Rickettsiosis
c. HIV infection
d. Poliomyelitis
e. Botulism

802. 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. Precipitate recrystallization
b. Processing precipitate with acetate acid solution
c. Processing precipitate with ammonia solution
d. Processing precipitate with 30% ammonium acetate solution
e. Processing precipitate with concentrated sulfate acid

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

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

805. 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. Down syndrome
b. Trisomy X
c. Turner syndrome
d. Cri-du-chat syndrome
e. Klinefelter syndrome

806. 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. Starch
b. Collagen
c. Cellulose
d. Chitin
e. Albumin

807. 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. Oxalate anions
b. Tetraborate anions
c. Carbonate anions

d. Benzoate anions
e. Formate anions

808. A sterile form of Inonotus obliquus xylotrophic fungus was sampled from the trunk of Betula pendula. Its alternative names include ''birch fungus'' and:
a. Chaga mushroom
b. Champignon
c. Fly agaric
d. Tinder fungus
e. Ergot

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

810. Name the ability of a drug to accumulate within the patient's body:
a. Allergy
b. Antagonism
c. Synergism
d. Habituation
e. Cumulation

811. 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. trachomatis
c. St. aureus
d. H. pylori
e. Cl. perfringens

812. What heterocycle has acidophobic properties?
a. Thiophene
b. Pyrrole
c. Pteridine
d. Quinoline
e. Pyrimidine

813. 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. $HClO_4$
b. H_3PO_4, $H_2C_2O_4$
c. HCl, H_2SO_4
d. HNO_3, CH_3COOH
e. H_2CO_3

814. Polymerase chain reaction (PCR) is widely used in modern laboratory diagnostics. What can be detected using this reaction?
a. Nucleic acid of the microorganism
b. Antibodies to the microorganism
c. Allergy to the pathogen
d. Autoimmune disease
e. Antigen of the microorganism

815. The ornithine cycle is the main way of ammonia neutralization in the human body. What substance is the end product of ammonia neutralization?
a. Arginine

b. Carbamoyl phosphate
c. Urea
d. Citrulline
e. Uric acid

816. 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. Anthrax
c. Plague
d. Typhus
e. Leptospirosis

817. 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. Kidneys
b. Adrenal glands
c. Skeletal muscles
d. Heart muscle
e. Liver

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

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

820. 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. Cumulation
b. Dysbacteriosis
c. Dependence
d. Habituation
e. Sensibilization

821. 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. Chemical condensation
b. Mechanical dispersion
c. Washing with a solvent
d. Chemical peptization
e. Physical condensation

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

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

824. 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. Stercobilin
b. Biliverdin
c. Conjugated bilirubin
d. Verdohemoglobin
e. Unconjugated bilirubin

825. Friedel-Crafts alkylation takes place in the presence of catalysts - Lewis acids. What compounds are included in the list of Lewis acids?

a. KMnO_4, Na_2S_2O_3
b. H_2O, H_2O_2
c. KOH, CaO
d. H_2SO_4, HNO_3
e. AlCl_3, FeBr_3

826. What fruits are apocarpous?

a. Cremocarp, disk-shaped schizocarp
b. Aggregate drupe, follicetum
c. Capsule, berry
d. Apple, acorn
e. Bean, single nutlet

827. The end product of starch hydrolysis is:

a. Saccharose
b. Maltose
c. D-fructose
d. D-galactose
e. D-glucose

828. A patient is pale, has goose bumps and chills. What stage of fever is it characteristic of?

a. Temperature decrease
b. Temperature increase
c. Compensation
d. Latent stage
e. Continuous fever

829. 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 anhydrous acetic acid
c. HCl solution in dioxane
d. HClO solution in anhydrous acetic acid
e. HCl solution in methanol

830. In pharmacy, extraction is used to extract bioactive substances from herbal raw materials. What law underlies this process?

a. Konovalov's law

b. Law of mass action
c. Poiseulle's law
d. Ostwald's law
e. Distribution law

831. What drug is advisable for individual malaria prophylaxis?
a. Trimethoprim/sulfamethoxazole (Co-trimoxazole)
b. Gentamicin
c. Rifampicin
d. Chingamin
e. Ampicillin

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

833. What is the mechanism of action of the antiviral drug acyclovir?
a. Antagonism with para-aminobenzoic acid
b. Increase of cellular membrane permeability
c. Blockade of cellular wall synthesis
d. Inhibition of protein synthesis
e. Inhibition of nucleic acid synthesis

834. 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. Sodium para-aminosalicylate
c. Ceftriaxone
d. Benzylpenicillin sodium
e. Isoniazid

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

836. 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. Huddleson reaction
c. Wassermann reaction
d. Wright reaction
e. Elek test

837. 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. Sulphate ions
c. Arsenate ions
d. Bromide ions

e. Iodide ions

838. To introduce a medicine into the body through the airways, the following type of substance must be used:

a. Aerosol

b. Emulsion

c. Ointment

d. Foam

e. Suspension

839. 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. Bacilli

b. Colibacilli

c. Ray fungi

d. Staphylococci

e. Mold fungi

840. Hydrolytic destruction of compounds is carried out by a certain class of enzymes - hydrolases. What compounds are being hydrolyzed with proteases?

a. Pyruvic acid

b. Proteins

c. Carbon dioxide

d. Higher fatty acids

e. Glucose

841. To treat atherosclerosis a patient has obtained hypolipidemic agent - Fenofibrate - from pharmacy. What is the pharmacological group of this drug?

a. beta-adrenergic blocking agents

b. Calcium channel blocking agents

c. Nitrofuranes

d. Fibrates

e. Muscarinic cholinergic receptor antagonists

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

a. Flat capitulum

b. Umbel

c. Spadix

d. Round capitulum

e. Spike

843. What kind of ground (functional) tissue is characteristic of above-ground organs of succulent plants, Cactaceae in particular?

a. Starch storage parenchyma

b. Spongy parenchyma

c. Hydroparenchyma

d. Folded parenchyma

e. Aerenchyma

844. 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. Decreased reabsorption of hydrogen carbonate in kidneys

b. Vomiting

c. Diarrhea

d. Intensified acidogenesis in kidneys

e. Pulmonary hyperventilation

845. 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. Clotrimazole
b. Adrenaline hydrochloride
c. Meloxicam
d. Isoniazid
e. Atropine

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

847. 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. Na
c. I
d. Br
e. F

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

849. What indicator is used in determination of primary aromatic amines using the nitritometric method?
a. Methyl orange
b. Potassium chromate
c. Tropeolin 00
d. Eosin
e. Phenolphthalein

850. 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. Mercury(I)
c. Silver
d. Mercury(II)
e. Iron(III)

851. Specify the standard solutions that are used in permanganatometry to quantify the oxidants by the residual titration method:
a. Potassium bromate, sodium thiosulfate
b. Potassium iodate, sodium thiosulfate
c. Potassium permanganate, iron (II) sulfate
d. Potassium dichromate, sodium thiosulfate
e. Cerium (IV) sulfate, iron (II) sulfate

852. 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

853. 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. Potassium iodide
b. Ammonium acetate
c. Barium chloride
d. Ammonium oxalate
e. Sodium chloride

854. 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. Diplococci surrounded by a capsule
c. Gram-positive diplococci located within leukocytes
d. Gram-negative cocci bacteria located within leukocytes
e. Lancet-shaped Gram-positive diplococci

855. The following method can be used to quantitatively determine magnesium sulfate in the solution:
a. Acidimetry
b. Argentometry
c. Thiocyanate titration
d. Nitrite titration
e. Complexometric titration

856. In the process of conductometric titration of HCl and CH_3COOH acids mixture 0,1 M solution of NaOH is used to measure:
a. Potential difference
b. Rotation angle of polarized light plane
c. Electrical conduction in solution
d. pH of medium
e. Refractive index

857. What local anesthetic is given to patients with cardiac rhythm disorder?
a. Lidocaine
b. Morphine hydrochloride
c. Caffeine and sodium benzoate
d. Nitrazepam
e. Paracetamol

858. 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. Opalescence
b. Sedimentation
c. Coagulation
d. Syneresis
e. Intramolecular diffraction

859. 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. Mycoplasma
b. Fungi
c. Viruses
d. Bacteria

e. Ray fungi

860. 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. HgI_2
b. PbI_2
c. Hg_2I_2
d. AgI
e. $PbCl_2$

861. 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. K^+
b. NH^4+
c. Ca^2+
d. Li^+
e. Na^+

862. 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. Innate immunity
b. Acquired natural passive immunity
c. Acquired natural active immunity
d. Non-specific resistance
e. Artificial immunity

863. 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. Reaction order does not matter
e. Third-order

864. What compound has no carboxyl group but nevertheless is called an acid?
a. Tartaric acid
b. Picric acid
c. Malic acid
d. Lactic acid
e. Valeric acid

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

866. 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. B_{12} and folic acid deficiency anemia
b. Hemolytic anemia
c. Hypoplastic anemia
d. Iron deficiency anemia
e. Iron refractory anemia

867. Quantitative content of oxalic acid can be determined by means of permanganatometry. How to

determine equivalence point for this kind of titration?
a. With adsorption indicator
b. With specific indicator
c. With pH indicator
d. When titrate changes its color after another drop of process solution is added
e. With redox indicator diphenylamine

868. 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. 2
b. 0
c. 4
d. 3
e. 1

869. 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. Amoxicillin + clarithromycin
b. Phenoxymethylpenicillin + lincomycin
c. Oxacillin + nalidixic acid
d. Levomycetin (chloramphenicol) + ampicillin
e. Streptomycin + benzylpenicillin

870. What substance can be used to prepare primary standard solutions of titrants?
a. KMnO_4
b. HCl
c. K_2Cr_2O_7
d. NaOH
e. I_2

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

872. 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. Extraction
b. Diffusion
c. Sedimentation
d. Coagulation
e. Solubilization

873. 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. Reversible
b. Diluted
c. Highly concentrated
d. Direct
e. Concentrated

874. 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. IgA
c. IgG
d. IgE
e. IgD

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

876. 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 open, organ is dicotyledon stem
c. Bundle is collateral closed, organ is monocotyledon stem
d. Bundle is amphivasal (lepto centric), organ is monocotyledon rhizome
e. Bundle is radial, organ is root of primary structure

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

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

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

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

881. 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. Benzene
b. Indican
c. Bilirubin

d. Ammonia
e. Cholesterol

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

883. 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. Large intestine
e. Duodenum

884. What ion increases osmotic pressure in the focus of inflammation?
a. Calcium
b. Fluorine
c. Magnesium
d. Potassium
e. Chlorine

885. 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. Protein
b. Indican
c. Glucose
d. Lactic acid
e. Creatine

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

887. A man suffers from cholelithiasis. What medicine should he be prescribed for biliary colic relief?
a. Contrykal (Aprotinin)
b. Magnesium sulfate
c. Pancreatin
d. Almagel (Algeldrate + magnesium hydroxide)
e. Bisacodyl

888. 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. Indirect bilirubin
b. Ammonium ions
c. Bile acids
d. Residual nitrogen
e. Ketone bodies

889. To determine the end point of an acid-base titration the following indicators are used:
a. Metal indicators

b. Redox indicators
c. Adsorption indicators
d. Luminescent indicators
e. pH-indicators

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

891. 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. Deaminization
b. Decarboxylation
c. Phosphorilation
d. Hydroxylation
e. Transamination

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

893. What thermodynamic potential is the criterion for the direction of a spontaneous process at constant volume and temperature?
a. Enthalpy
b. Gibbs energy
c. Helmholtz energy
d. Chemical potential
e. Entropy

894. 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. Fluorescein
c. Phenolphthalein
d. Ammonium iron(III) sulfate
e. Methyl red

895. What chemotherapeutic agent is a drug of choice for treatment of herpes?
a. Chingamin
b. Doxycycline hydrochloride
c. Metronidazole
d. Rifampicin
e. Acyclovir

896. 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. KMnO_4
b. Cu(OH)_2
c. AlCl_3
d. FeCl_3
e. Br_2

897. 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. Oxytocin
b. Dinoprost
c. Anaprilin (Propranolol)
d. Folliculin (Estrone)
e. Proserin

898. 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. Lignified
c. Suberinized
d. Slimified
e. Mineralized

899. The enzymes of medicinal substance metabolism that require monooxygenase reactions of biotransformation are localized in the cells mainly in the:

a. Microsomes of the endoplasmic reticulum
b. Lysosomes
c. Nucleus
d. Mitochondria
e. Cytosol

900. What method can be used to determine the moisture content in thermally unstable preparations?

a. Bromatometric method
b. Iodometric method
c. Permanganatometric method
d. Non-aqueous titration using the Fischer's method
e. Nitritometric method

901. 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. Streptococci
b. Candida fungi
c. Meningococci
d. Pneumococci
e. Staphylococci

902. 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. Tussilago farfara
b. Verbascum phlomoides
c. Sambucus nigra
d. Thymus serpillum
e. Origanum vulgare

903. How according to the Pharmacopoeia is pH determined?

a. Indicator
b. Polarography
c. Potentiometry
d. Conductometry
e. Spectrophotometry

904. What antifungal antibiotic is poorly absorbed in the gastrointestinal tract and is effective against

intestinal candidiasis?
a. Ketoconazole
b. Fluconazole
c. Griseofulvin
d. Terbinafine
e. Nystatin

905. Herbarium specimens of medicinal plants are being studied. Which one of them belongs to Rosaceae family?
a. Melilotus officinalis
b. Polygonum persicaria
c. Capsella bursa-pastoris
d. Crataegus sanguinea
e. Conium maculatum

906. What pair of electrodes is used in potentiometric redox titration?
a. Copper electrode and zinc electrode
b. Glass electrode and silver chloride electrode
c. Silver sulfide electrode and silver chloride electrode
d. Platinum electrode and silver chloride electrode
e. Silver electrode and platinum electrode

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

908. A patient in a state of psychosis was prescribed the following antipsychotic:
a. Aminazine (Chlorpromazine)
b. Caffeine
c. Cyclodol (Trihexyphenidyl)
d. Diazepam
e. Phenobarbital

909. A patient has been diagnosed with bronchial asthma. Specify the drug that can be administered for asphyxiation:
a. Paracetamol
b. Diclofenac sodium
c. Salbutamol
d. Acetylcysteine
e. Anapriline

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

911. 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. Idiosyncrasy
b. Allergic reaction
c. Withdrawal syndrome

d. Drug allergy
e. Pharmacotoxic response

912. 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. Histamine
b. Heparin
c. Hyaluronic acid
d. Chondroitin sulfate
e. Tetracycline

913. 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. Benzylpenicillin
b. Ceftriaxone
c. Abaktal (Pefloxacin)
d. Streptomycin
e. Ampicillin

914. 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. Genetically engineered vaccines
b. Anatoxin vaccines
c. Chemical vaccines
d. Live vaccines
e. Inactivated vaccines

915. Microorganisms in the environment are being affected by various physical factors. What is the effect of high temperature on a microbial cell?
a. Fats saponification
b. Irreversible degradation of all cellular structures
c. Mutagenic effect
d. Transition into anabiosis state
e. Albuminolysis

916. Antiparkinsonian drugs are classified based on the mechanism of their action in the body. What drug is a dopamine precursor?
a. Levodopa
b. Midantan (Amantadine)
c. Cyclodol (Trihexyphenidyl)
d. Selegiline
e. Bromocriptine

917. When activated carbon is included in the combination therapy, the absorption of the other drugs changes in the following way:
a. Increases
b. Activates
c. Decreases
d. Remains unchanged
e. Accelerates

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

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

920. What types of inflorescence are characteristic of the Cruciferae family?
a. Head or corymb
b. Corymb or spike
c. Tassel or panicle
d. Spadix or panicle
e. Head or umbel

921. What drug is prescribed for prevention of myocardial infarction, if there are contraindications to acetylsalicylic acid?
a. Ticlopidine
b. Neodicoumarin (ethyl biscoumacetate)
c. Heparin
d. Streptokinase
e. Phenylin (Phenindione)

922. An enzyme transports structure fragments from one substrate into another. Name this class of enzymes:
a. Oxidoreductases
b. Hydrolases
c. Isomerases
d. Ligases
e. Transferases

923. 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. Basophilia
b. Eosinophilia
c. Monocytosis
d. Heutrophilia
e. Lymphocytosis

924. 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. Pinus
b. Cedrus
c. Larix
d. Abies
e. Picea

925. 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 calcium ions
b. Ammonium and lead(II) ions
c. Ammonium and stanium(II) ions
d. Ammonium and mercury(I) ions
e. Ammonium and mercury(II) ions

926. 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. Globular proteins

b. Structured proteins
c. -
d. Fibrillar proteins
e. Chain proteins

927. 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 100 bacteria and fungi
b. A total of 1000 bacteria and fungi
c. 100 bacteria and 100 fungi
d. 100 bacteria and 50 fungi
e. A total of 500 bacteria and fungi

928. 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. Irradiation sterilization
b. Formaldehyde vapor
c. Ultraviolet irradiation
d. High-frequency current
e. Flowing steam

929. 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. Vinca minor
b. Atropa belladonna
c. Papaver somniferum
d. Chelidonium majus
e. Datura stramonium

930. What drug can be used to stop a bronchospasm?
a. Atenolol
b. Aspirin
c. Omnoponum
d. Salbutamol
e. Amoxicillin

931. 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. These disorders have not been caused by the medicines
b. Inhibition of hematopoiesis in the bone marrow
c. Bone marrow stimulation
d. Intensified use of blood elements
e. Destruction of blood elements

932. 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. The solution pH becomes <7, because of hydrolysis of these ions
b. They interfere with the determination of potassium and sodium ions
c. Compounds with K^+ and Na^+ ions form supersaturated solutions
d. Ammonium salts decompose at high temperatures
e. The solution pH becomes >7, because of hydrolysis of these ions

933. A patient suffers from hyperchromic B_12-deficiency anemia. What vitamin preparation should be prescribed in this case?

a. Vicasol (Menadione)
b. Riboflavin
c. Retinol acetate
d. Cyanocobalamin
e. Thiamine chloride

934. 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. No movements in one half of the torso
b. Impaired initiation and planning of movements
c. Impaired temporal and spatial movement orientation
d. No movements in the upper limbs
e. Excessive movements

935. 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. Thiamine pyrophosphate
b. Nicotinamide adenine dinucleotide
c. Pyridoxal phosphate
d. Coenzyme A
e. Flavin adenine dinucleotide

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

937. What group of diuretics completely rules out simultaneous prescription of hypotensive drugs that are ingibitors of angiotensin converting enzyme?
a. Osmotic
b. Xanthine
c. Loop
d. Potassium-sparing
e. Thiazide

938. 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. Fabaceae
b. Papaveraceae
c. Apiaceae
d. Compositae
e. Rosaceae

939. 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. Spontaneous
b. Natural selection
c. Mutational
d. R-plasmid
e. Phenotypic

940. Hemoglobin breakdown begins in the cells of reticuloendothelial system. What enzyme catalyzes the reduction reaction of biliverdine into bilirubin?
a. Hexokinase

b. Biliverdine reductase
c. Xanthine oxidase
d. Heme oxygenase
e. beta-glucuronidase

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

942. 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. Increased bradykinin levels
b. Inhibition of angiotensin receptors
c. Decreased renin levels
d. Depletion of the noradrenaline reserves
e. Accumulation of angiotensin II

943. 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. Mechanical jaundice
b. Parenchymal jaundice
c. Crigler-Najjar syndrome
d. Hemolytic jaundice
e. Gilbert's syndrome

944. What is the mechanism of action of a catalyst in a chemical reaction?
a. Changes the nature of the reagents
b. Reduces activation energy
c. Changes the degree of dispersion
d. Does not change the activation energy
e. Increases activation energy

945. Oxygen cocktails are used in treatment of upper air passages. What kind of colloid system is it?
a. Paste
b. Emulsion
c. Aerosol
d. Powder
e. Suspension

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

947. 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. Indole
b. Putrescine
c. Adrenaline
d. GABA
e. Cadaverine

948. What type of tautomerism is characteristic of monosaccharide?
a. Aci-nitro
b. Keto-enol
c. Oxo-cyclo (ring-chain)
d. Azole
e. Lactam-lactim

949. What substance forms colloid solution when dissolved in water?
a. Potassium gluconate
b. Silver nitrate
c. Collargol
d. Sucrose
e. Sodium sulfate

950. An athlete is recommended to take carnitine to improve his achievements. What process does carnitine activate?
a. Fatty acids transport
b. Glucose transport
c. Vitamin K transport
d. Amino acids transport
e. Vitamin B_12 transport

951. After a stress, a woman has problems sleeping. What medicine is preferable for the treatment of insomnia in this case?
a. Nitrazepam
b. Phenobarbital
c. Aminazine (Chlorpromazine)
d. Chloral hydrate
e. Barbital

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

953. 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. Pulmonary venous hypertension
b. Acute left ventricular failure
c. Decreased alveolocapillary oxygen diffusion
d. Pulmonary arterial hypertension
e. Hypoxemia

954. A patient diagnosed with viral hepatitis developed ascites, jaundice, itching, leg edemas, and dyspnea. What type of jaundice is observed in the patient?
a. Parenchymatous
b. Hemolytic
c. Suprahepatic
d. Obstructive
e. Mechanical

955. 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. Mitochondria

b. Chloroplasts
c. Vacuoles
d. Ribosomes
e. Lysosomes

956. 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. Phenylbutazone
c. Prednisolone
d. Diclofenac sodium
e. Indometacin

957. 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. Globoids
b. Druses
c. Crystalline sand
d. Styloids
e. Cystoliths

958. Pathogenic microorganisms are characterized by presence of aggression enzymes that determine their virulence. Select the aggression enzyme:
a. Transferase
b. Oxidase
c. Lyase
d. Hyaluronidase
e. Carbohydrase

959. 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. Progression
b. Exudation
c. Promotion
d. Inactivation
e. Transformation

960. High-molecular substances can be isolated from the solution using electrolytes. Name this process.
a. Swelling
b. Salting out
c. Aggregation
d. Sedimentation
e. Coagulation

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

962. A fruit is a capsule with oblate light brown smooth glossy seeds that mucify when moistened. This fruit belongs to:
a. Digitalis purpurea
b. Hypericum perforatum
c. Linum usitatissimum

d. Linaria vulgaris
e. Ledum palustre

963. A patient with frequent recurrent chronic bronchitis is prescribed a sulfanilamide drug. This drug is an analog of the following compound:
a. Formic acid
b. P-aminobenzoic acid
c. Citric acid
d. Lactic acid
e. Uric acid

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

965. 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 C
b. Acylcarnitine transferase
c. ATP / ADP translocase
d. Ubiquinone
e. Cytochrome oxidase

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

967. What anti-gout drug, based on its mechanism of action, is a urate-lowering agent and a xanthine oxidase inhibitor?
a. Etamide
b. Allopurinol
c. Urolesane
d. Urodan
e. Urosulfan (Sulfacarbamide)

968. In order to bind hydrogen ions with tartaric acid during identification of potassium ions the following solution is used:
a. Sodium hydroxide
b. Sulfuric acid
c. Sodium acetate
d. Hydrochloric acid
e. Ammonia

969. 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. Calendula tincture
b. Schisandra tincture
c. Camomile flowers infusion
d. Oak bark decoction

e. Eucalyptus tincture

970. What mucolytic agent would you recommend for the patient with acute bronchitis to facilitate expectoration?
a. Libexin (Prenoxdiazine)
b. Hydrocodone
c. Acetylcysteine
d. Codeine
e. Glaucine

971. 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. Solubilization
b. Neutralization
c. Sedimentation
d. Adsorption
e. Coagulation

972. Proserin is a reverse acetylcholinesterase inhibitor. What is the mechanism of inhibitory action of the drug?
a. Enzyme denaturation
b. Covalent bond outside of enzyme active center
c. Oxidation of iron ion in enzyme active center
d. Competition with acetylcholine for enzyme active center
e. Covalent bond with enzyme substrate

973. 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. Faraday law
b. Coulomb law
c. Beer-Bouguer-Lambert law
d. Stokes law
e. Newton law

974. 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. Gel formation
c. Coagulation
d. Condensation
e. Peptization

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

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

e. Amination

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

a. Epidermis

b. Hypodermis

c. Exodermis

d. Periderm

e. Epiblem

978. 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. Anaphylactic

b. Stimulated

c. Delayed-type hypersensitivity

d. Cytolytic

e. Immune complex

979. Transformation C_2H_4 (alkene) longrightarrow C_2H_6 (alkane) occurs during the following reaction:

a. Hydrogenation

b. Dimerization

c. Dehydrogenation

d. Dehydration

e. Hydration

980. Choose the colloid surfactant out of the substances listed below:

a. Iodine

b. Polyethylene

c. Sodium chloride

d. Gelatin

e. Potassium oleate

981. Why do alcohols have higher boiling points as compared to their isomeric ethers?

a. Ether ability to form associates

b. Ability to participate in electrophilic substitution reactions

c. Dehydration ability of alcohols

d. Formation of intermolecular hydrogen bonds

e. Increased molecular weight

982. 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. Introduction of enzymes, hormones

b. Isolated organs

c. Stimulation

d. Irritation

e. Shutdown

983. Catalysts are widely used in production of drugs. How can reaction acceleration in the presence of a catalyst be explained?

a. Molecule speed increases

b. Collision frequency decreases

c. Total collision frequency increases

d. Activation energy increases

e. Activation energy decreases

984. Microbial survival within environment is facilitated by spore formation. What microorganisms of those listed below are spore formers:

a. Clostridia
b. Peptococci
c. Staphylococci
d. Bacteroides
e. Peptostreptococci

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

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

987. 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. High density lipoproteins
b. Chylomicrons
c. Low density lipoproteins
d. Triglycerides
e. Fatty acid-albumin complexes

988. Choose the most efficient way of convallariae glycoside administration for acute cardiac failure treatment:
a. Intravenous
b. Intramuscular
c. Oral
d. Inhalational
e. Subcutaneous

989. What drug is used as an antidote in cases of overdose with narcotic analgesics?
a. Atropine
b. Cordiamine (Nikethamide)
c. Naloxone
d. Unithiol
e. Ephedrine

990. 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. Dry heat
b. Pasteurization
c. Ignition
d. Tyndallization
e. Boiling

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

e. Green precipitate

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

993. 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. Phyllotaxy
b. Metamorphosis
c. Venation
d. Heterophylly
e. Leaf mosaic

994. Dimethylethylamine belongs to:
a. Primary amines
b. Secondary amines
c. -
d. Quaternary ammonium salts
e. Tertiary amines

995. What is represented by such a pharmacokinetic value of a drug as its biological half-life (T1/2)?
a. Correlation between the drug clearance rate and plasma drug concentration
b. Period of total body clearance
c. Blood plasma volume cleared of drug within a time unit
d. Renal clearance rate
e. Time period in which plasma drug concentration decreases by 50%

996. What rule describes the coagulation of sols under the effect of electrolytes?
a. Gibbs rule
b. Van 't Hoff rule
c. Arrhenius equation
d. Schulze-Hardy rule
e. Duclos–Traube rule

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

998. 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. Hemorrhagic
b. Purulent
c. Fibrinous
d. Catarrhal
e. Serous

999. Alimentary hyperglycemia is observed after eating carbohydrate-rich foods. What hepatocyte enzyme activity is induced the most in this case?
a. Phosphorylase
b. Isocitrate dehydrogenase

c. Aldolase
d. Glucose-6-phosphatase
e. Glucokinase

1000. What indicator is used for the quantitative determination of sodium carbonate in a preparation by the method of acid-base titration?
a. Murexide
b. Methylene blue
c. Ferroin
d. Methyl orange
e. Diphenylamine

1001. 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. Taraxacum officialis
b. Achillea millefolium
c. Bidens tripartita
d. Centaurea cyanus
e. Echinacea purpurea

1002. 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. Nickel
b. Mercury (II)
c. Cobalt (II)
d. Cadmium
e. Bismuth

1003. 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. Ropivacaine
b. Ultracaine (Articaine)
c. Lidocaine
d. Novocaine (Procaine)
e. Anesthesin (Benzocaine)

1004. A patient came to the pharmacy to obtain an antidiarrheal agent. What drug would be recommended by the dispensing chemist?
a. Anesthesin (Benzocaine)
b. Picolax (Sodium picosulfate)
c. Ranitidine
d. Dicaine (Tetracaine)
e. Loperamide

1005. 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
b. Eutectic melt
c. Eutectic melt, camphor crystals, chloral hydrate crystals
d. Eutectic melt, chloral hydrate crystals
e. Camphor crystals, chloral hydrate crystals

1006. A patient with type II diabetes mellitus was prescribed a synthetic drug that is a sulfonylurea derivative. Name this drug:
a. Prednisolone

b. Insulin
c. Glibenclamide
d. Anaprilin (Propranolol)
e. Furosemide

1007. Wheat has linear inflorescences with biflorous sessile spikelets arranged in two rows. Name this type of inflorescence:
a. Panicle
b. Corymb
c. Spike
d. Spadix
e. Compound spike

1008. How many atoms does a furanose cycle consist of?
a. 3
b. 5
c. 6
d. 4
e. 7

1009. 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. Retention hyperlipemia
b. Hyperplastic obesity
c. Alimentary hyperlipemia
d. Hypertrophic obesity
e. Transport hyperlipemia

1010. 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. Burn shock
b. Anaphylactic shock
c. Septic shock
d. Traumatic shock
e. Cardiogenic shock

1011. What carboxylic acid is an aromatic monocarboxylic acid and can be used in treatment of skin diseases as an external antiseptic and fungicide?
a. Benzoic acid
b. Formic acid
c. Acetic acid
d. Butyric acid
e. Valeric acid

1012. 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. Phenylin (Phenindione)
b. Vicasol (Menadione)
c. Aminocaproic acid
d. Thrombin
e. Contrykal (Aprotinin)

1013. What solution can be determined by the photocolorimetric method measuring self-absorbance?
a. Potassium phosphate
b. Potassium nitrate
c. Potassium chromate
d. Potassium sulphate
e. Potassium chloride

1014. 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. Sedimentation

d. Coagulation

e. Flotation

1015. Enzymes accelerate biochemical reactions, making them occur more than 10^8 times faster. What equation describes the rate of enzyme catalysis?

a. Michaelis-Menten equation

b. Arrhenius equation

c. Van't Hoff equation

d. Law of mass action

e. Van't Hoff reaction isotherm

1016. Fatty degeneration of liver is prevented by lipotropic substances. Which of the following substances belongs to them?

a. Bilirubin

b. Cholesterol

c. Methionine

d. Glucose

e. Glycine

1017. Alkaline hydrolysis of esters (complex ethers) is called:

a. Condensation

b. Rearrangement

c. Etherification

d. Oxidation

e. Saponification

1018. 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. Keratin

b. Albumin

c. Prothrombin

d. Globulin

e. Histone

1019. 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. Glycogenosis

e. Steroidogenic diabetes

1020. Quantitative content of hydrogen peroxide can be determined by means of the following self-indicator method:

a. Iodometry

b. Bromatometry

c. Permanganatometry

d. Argentometry

e. Nitritometry

1021. 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. Phellogen

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

1022. 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 is contraindicated for elderly patients
c. It increases blood pressure
d. It acts as a muscarinic agonist
e. It acts as a muscarinic antagonist

1023. 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. Fatty acids
b. Globulins
c. Purine bases
d. Triglycerides
e. Albumins

1024. Enzyme activity is measured to diagnose diseases of the pancreas. What enzyme must be used in acute pancreatitis?
a. Deoxyribonuclease
b. Aldolase
c. Ribonuclease
d. Amylase
e. Alanine aminotransferase

1025. Trimerization of acetylene results in the following product:
a. Benzene (benzol)
b. Vinylacetylene
c. Trimethylbenzene
d. 2-Butyne
e. Cyclooctatetraene

1026. If there is no strophanthin in the pharmacy stock, the following cardiac glycoside can be used as its substitute:
a. Adonisid (Adonis vernalis glycosides)
b. Digitoxin
c. -
d. Izolanid (Lanatoside C)
e. Corglycon (Convallatoxin)

1027. 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. Beta-blockers
c. Sympatholytics
d. Alpha-blockers
e. Muscarinic antagonists

1028. Coagulation of sols under the effect of electrolytes can be determined by a general rule. Name this rule.
a. Gibbs rule
b. Van't Hoff rule
c. Schulze-Hardy rule
d. Arrhenius law
e. Duclos-Traube rule

1029. 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. Lithium iodide
b. Magnesium iodide
c. Sodium iodide
d. Calcium iodide
e. Potassium iodide

1030. 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. Acorus calamus
c. Convallaria majalis
d. Agropyron repens
e. Allium sativum

1031. A patient developed an atrioventricular block. What drug is indicated in this case?

a. Atropine
b. Metoprolol
c. Clophelin (Clonidine)
d. Anaprilin (Propranolol)
e. Pirenzepine

1032. 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. Allergic response
b. Sensitivity loss
c. Water-electrolyte imbalance
d. Visual impairment
e. Gastrointestinal disorders

1033. 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. Compensated
b. Neutralized
c. Electroneutral
d. Neutral
e. Isoelectric

1034. Thiocyanatometric titration method requires secondary standard solution of potassium thiocyanate that is standardized with standard solution of:

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

1035. 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. Oxidoreductases
b. Isomerases
c. Transferases
d. Ligases
e. Hydrolases

1036. 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. Nessler's reagent
d. Lead acetate solution
e. Magnesia mixture (a solution containing MgCl_2, NH_4Cl, NH_3)

1037. 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. Urobilinogen
c. Stercobilinogen
d. Carotene
e. Chlorophyll

1038. 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. Syneresis
b. Salting-out
c. Thixotropy
d. Coacervation
e. Coagulation

1039. A standard alkali solution is used to determine substances of acidic nature. This method is called:
a. Alkalimetry
b. Complexometry (Chelatometry)
c. Acidimetry
d. Gravimetry
e. Redoxymetry (Oxidimetry)

1040. 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. Peripheral vasodilation
b. Increased diuresis
c. Development of chills
d. Increased heat production
e. Increased respiration rate

1041. 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. Type 1 diabetes mellitus
b. Diabetes insipidus
c. -
d. Type 2 diabetes mellitus
e. Gestational diabetes

1042. 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. Acetic
b. Hydrochloric
c. Sulfuric
d. Sulfanilic
e. Oxalic

1043. 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. Eutectic melt, chloralhydrate crystals
c. Camphor crystals, chloralhydrate crystals
d. Eutectic melt, camphor crystals, chloralhydrate crystals
e. Eutectic melt, camphor crystals

1044. What factor will cause an increase in glomerular filtration in the kidneys?
a. Reduced hydrostatic pressure in the glomerular capillaries
b. Increased intra-renal pressure
c. Reduced oncotic blood pressure
d. Reduced number of functioning glomeruli
e. Increased oncotic blood pressure

1045. A pure culture of movable vibrios was obtained from a patient diagnosed with cholera. What group of flagellates does this agent belong to?
a. -
b. Lophotrichous
c. Monotrichous
d. Amphitrichous
e. Peritrichous

1046. 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. Epiblem
b. Pericycle
c. Endodermis
d. Exodermis
e. Mesodermis

1047. What compound is added along with the murexide indicator to reach pH>12, when detecting calcium cations?
a. Ammoniac buffer
b. Acetate buffer
c. Sodium hydroxide
d. Ammonium hydroxide
e. Urotropin

1048. A woman presents with poor twilight vision and dry conjunctiva and cornea. What vitamin deficiency can cause such disorders?
a. D
b. B_12
c. B
d. A
e. C

1049. An engine driver complains of his seasonal allergy symptoms. What non-sedating drug should be prescribed in this case?
a. Novocaine
b. Analgine (Metamizole)
c. Loratadine
d. Atenolol
e. Fenofibrate

1050. 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. Biotin
b. Carnitine
c. Thiamine
d. Ubiquinone

e. Riboflavin

1051. A child had been administered antidiphtheric serum. What resistance was formed in the child?
a. Pathological
b. Passive
c. Physiological
d. Active
e. Primary

1052. An elderly patient suffers from constipation caused by colon hypotonia. What drug should be prescribed?
a. Novocainamide (Procainamide)
b. Bisacodyl
c. Sodium sulfate
d. Atropine sulfate
e. Castor oil

1053. 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 green
b. The solution colors yellow
c. A white precipitate is formed
d. The solution colors pink
e. A blue precipitate is formed

1054. Molar attenuation coefficient is the optical density of a solution with absorbent layer 1 cm thick and concentration that equals:
a. 1%
b. 1 mol/L
c. 1 g/L
d. 0.1 mol/L
e. 1 g/mL

1055. Direct complexometric titration is used to determine the concentration of:
a. Hydrogen ions
b. Strong acid anions
c. Metal cations
d. Weak acid anions
e. Hydroxide ions

1056. 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. E) coli
b. C) albicans
c. S. aureus
d. Streptomycetes
e. Actinomycetes

1057. Nitrate anions, unlike nitrite anions, do not interact with:
a. Diphenylamine
b. Iron(II) sulfate and sulfuric acid
c. Sulfanilic acid
d. Potassium permanganate
e. Antipyrine

1058. Specific reactions used in qualitative analysis make it possible to:
a. Detect only a certain group of ions

b. Detect an ion without previous separation of other ions
c. Detect only anions
d. Detect an ion with previous separation
e. Detect only cations

1059. 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. Carbonic anhydrase
d. Tyrosinase
e. Arginase

1060. 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. Monocarpous
b. Syncarpous
c. Lysicarpous
d. Paracarpous
e. Apocarpous

1061. Specify what method of redox titration requires the use of specific indicator - starch - to fix the end point:
a. Bromatometry
b. Cerimetry
c. Iodometry
d. Permanganatometry
e. Nitritometry

1062. 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. Prestasis, stasis, spasm of arterioles, arterial hyperemia, venous hyperemia
b. Venous hyperemia, stasis, spasm of arterioles, arterial hyperemia, prestasis
c. Spasm of arterioles, arterial hyperemia, venous hyperemia, prestasis, stasis
d. Arterial hyperemia, venous hyperemia, prestasis, stasis, spasm of arterioles
e. Venous hyperemia, arterial hyperemia, prestasis, stasis, spasm of arterioles

1063. 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. Serous
b. Hemorrhagic
c. Purulent
d. Mixed
e. Fibrinous

1064. 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. Potentilla erecta
b. Petroselinum crispum
c. Hipericum perforatum
d. Tussilago farfara
e. Datura stramonium

1065. 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. Interferon

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

1066. 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. Ethyl alcohol
b. Potassium permanganate
c. Iodine alcohol solution
d. Brilliant green
e. Hydrogen peroxide

1067. 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. Nitric acid solution
b. Sulfuric acid solution
c. Saturated solution of sodium hydrogencarbonate
d. Acetic acid solution
e. Ammonia solution

1068. 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. Solanum dulcamara
c. Ononis arvensis
d. Hyoscyamus niger
e. Atropa belladonna

1069. 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. Cr^3+
b. Zn^2+
c. Al^3+
d. Bi^3+
e. Fe^3+

1070. Datura stramonium fruit is a:
a. Silicular capsule
b. Pseudomonocarpous drupe
c. Legume with two seeds
d. Trihedral nutlet
e. Spiny capsule

1071. What type of gynoecium has several or many free carpels?
a. Cenocarpous
b. Syncarpous
c. Monocarpous
d. Apocarpous
e. Paracarpous

1072. 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. Circulatory
b. Respiratory
c. Mixed
d. Tissue
e. Hypoxic

1073. 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. Procambium
b. Periderm
c. Pericycle
d. Cambium
e. Phellogen

1074. 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. Pseudomonas aeruginosa
b. Yersinia pestis
c. Proteus vulgaris
d. Enterococcus faecalis
e. Staphylococcus aureus

1075. 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. Bromhexine
b. Pentazocine
c. Phenolphthalein
d. Validol (Menthyl isovalerate)
e. Unithiol

1076. 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. Metoclopramide
b. -
c. Tabex (Cytisine)
d. Diphenin (Phenytoin)
e. Piracetam

1077. 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. Methanol
c. Glucose
d. Fructose
e. Cholesterol

1078. To identify a drug by thin-layer chromatography the following parameter is used:

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

1079. A 10-year-old child has height of 178 cm and body mass of 67 kg. These presentations are caused by the functional disturbance of the:

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

1080. 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. Loeffler stain
b. Ziehl-Neelsen stain
c. Neisser stain
d. Gram stain
e. Aujeszky stain

1081. A patient with symptoms of cardiac glycosides intoxication is prescribed Unithiol (Dimercaprol). What is the drug's mechansm of action?

a. Increase of K^+ penetration of myocardiocytes
b. Induction of cardiac glycosides metabolism
c. Increase of Na^+ content in myocardium
d. Reactivation of membrane K^+, Na^+-adenosinetriphosphatase
e. Binding ionized Ca^2+

1082. 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. 500
b. 400
c. 300
d. 200
e. 100

1083. 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

1084. What drug must be prescribed to treat a patient with malaria?

a. Chloramine
b. Chingamine (Chloroquine)
c. Tetracycline
d. Sulfamethoxazole
e. Ceftriaxone

1085. Heparin was prescribed as a part of complex therapy for myocardial infarction. This drug belongs to the following group:

a. Detoxifiers
b. Hormonal preparations
c. Direct anticoagulants
d. Coagulants
e. Vitamin preparations

1086. According to the Bancroft's rule, the dispersion medium of an emulsion will be the liquid, with which the emulsifier:

a. Forms a colored compound
b. Forms an insoluble compound
c. Forms a precipitate
d. Chemically interacts

e. Has affinity

1087. 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. Quercus robur
b. Potentilla erecta
c. Leonurus quinquelobatus
d. Coriandrum sativum
e. Armeniaca vulgaris

1088. What reaction is the common reaction for detection of arsenic(III) and arsenic(V) compounds?

a. Reaction with sodium nitrate
b. Reaction with ammonium molybdate
c. Reaction of reduction to arsine
d. Reaction with potassium iodide
e. Reaction with iodine

1089. What reference electrode can be used in potentiometric analysis of a medicinal substance?

a. Zinc
b. Antimony
c. Silver chloride
d. Glass
e. Quinhydrone

1090. L-DOPA and its derivatives are used in treatment of Parkinson's disease. What aminoacid is this substance made of?

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

1091. 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. Red with a metallic sheen
b. Yellow
c. Colorless
d. Blue-violet
e. Dark brown

1092. A hospitalised patient was diagnosed with immunity deficiency that resulted in low resistance against viral infection. What cells are most probably deficient?

a. Macrophages
b. B-lymphocytes
c. Neutrophiles
d. T-lymphocytes
e. Fibroblasts

1093. Colloidal systems are widely used in medicine. In pastes:

a. Dispersed medium - solid, continuous medium - solid
b. Dispersed medium - liquid, continuous medium - liquid
c. Dispersed medium - solid, continuous medium - liquid
d. Dispersed medium - solid, continuous medium - gas
e. Dispersed medium - liquid, continuous medium - gas

1094. 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. Ethane
b. Methanal
c. Sodium formate
d. Methanol
e. Methane

1095. A patient with atherosclerosis was prescribed an antiatherosclerotic agent. Name this drug:
a. Ascorbic acid
b. Fenofibrate
c. Butadion (Phenylbutazone)
d. Dexamethasone
e. Piracetam

1096. Select lyophilic systems among the dispersion systems listed below.
a. Emulsions
b. Sols
c. Solid foams
d. Surfactant solutions
e. Suspensions

1097. A fibrinolysis inhibitor was used to stop postpartum bleeding. Name this drug.
a. Hemostatic sponge
b. Nettle leaves
c. Aminocaproic acid
d. Calcium chloride
e. Thrombin

1098. 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. Thiamin
d. Pantothenic acid
e. Folic acid

1099. Gypsum water is added to a test solution for analytical determination of barium ions. What visual effect is observed in this case?
a. A characteristic odor appearing
b. Formation of a blue precipitate
c. Yellow coloring of the solution
d. Formation of a white precipitate
e. Production of a brown gas

1100. 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. Brucellosis
c. Botulism
d. Q fever
e. Salmonellosis

1101. 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. Phthalylsulfathiazole
b. Sulfadimezinum
c. Furacilinum

d. Methisazonum
e. Ftivazide

1102. In hypoxia, lactic acid accumulates in the blood. Name the end product of anaerobic glycolysis.
a. Malate
b. Alanine
c. CO_2 and H_2O
d. Lactate
e. Oxaloacetate

1103. What compound will react with propane under the given conditions?
a. H_2SO_4 concentrated
b. Cl_2, $FeCl_3$
c. Br_2, hnu, 20^oC
d. HNO_3 concentrated
e. CH_3COONO_2

1104. 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. Bryobionta
b. Green algae
c. Gymnosperms
d. Polypodiophyta
e. Angiosperms

1105. When protective action of proteins weakens, cholesterol accumulates on the vessel walls because its particles become glued together. Name this phenomenon:
a. Sensitization
b. Sedimentation
c. Coagulation
d. Synergism
e. Thixotropy

1106. A patient has toxic pulmonary edema. What drug must be used for emergency aid in this case?
a. Hydrochlorothiazide
b. Diacarb (Acetazolamide)
c. Mannitol
d. Indapamide
e. Spironolactone

1107. 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. AgOH
d. $[Ag(NH_3)_2]Cl$
e. $[Ag(NH_3)_3]Cl$

1108. 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

1109. 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 white precipitate

b. Formation of a violet precipitate
c. Formation of a black precipitate
d. Formation of a yellow precipitate
e. Formation of a blue precipitate

1110. 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. Solanaceae
b. Lamiaceae
c. Apiaceae
d. Asteraceae
e. Fabaceae

1111. What conditions are necessary for the formation of crystalline precipitates?
a. Slow precipitation in hot dilute solutions
b. Rapid precipitation in hot concentrated solutions
c. Rapid precipitation in hot dilute solutions
d. Slow precipitation in cold dilute solutions
e. Slow precipitation in cold concentrated solutions

1112. 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. Bidens tripartita
b. Gnaphalium uliginosum
c. Arnica montana
d. Centaurea cyanus
e. Echinops ritro

1113. What potential forms at the interface between two solutions?
a. Surface potential
b. Electrokinetic potential
c. Contact potential
d. Diffusion potential
e. Electrode potential

1114. 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. Transcription
b. Translation
c. Replication
d. Reparation
e. Recognition

1115. 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. Dysentery
b. Viral hepatitis
c. Anthrax
d. Diphtheria
e. Pertussis

1116. 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. Potentiation
b. Tolerance
c. Drug addiction

d. Material cumulation
e. Summation

1117. What method is used for the quantification of bismuth in a preparation?
a. Mercurimetry
b. Argentometry
c. Iodometry
d. Permanganatometry
e. Complexonometry

1118. Isoelectric state of protein molecules depends on the:
a. Solution preparation technique
b. Mass of the solute
c. pH of the medium
d. Shape of the protein molecule
e. Concentration of the solvent

1119. 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. Autoclaving
c. Tyndallization
d. Moist heat sterilization
e. Flaming

1120. 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. Hesperides
b. Rose hips
c. Coenobia
d. Cenocarp stone-fruits
e. Aggregate-accessory fruits

1121. What nutrient medium is used for obtaining a fungal culture?
a. Endo medium
b. Ploskirev medium
c. Casein-carbon agar
d. Kitt-Tarozzi medium
e. Sabouraud medium

1122. 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. Mucus
b. Intrinsic antianemic factor
c. Gastricsin
d. Pepsin
e. Hydrochloric acid

1123. Cellulose hydrolysis produces the following disaccharide:
a. Sucrose
b. Lactose
c. Cellobiose
d. Maltose
e. Glucose

1124. Bacteria eventually become resistant to antibacterial agents. What enables gram-positive bacteria's resistance to penicillin antibiotics?
a. Protein synthesis

b. Beta-lactamases production
c. Cell wall permeability
d. Active synthesis of peptidoglycane
e. Active transport of antibiotics

1125. What analytical method can be used to quantify hydrogen peroxide without any special indicators?
a. Complexonometry
b. Argentometry
c. Nitritometry
d. Permanganatometry
e. Iodometry

1126. Production of digestive juices by gastrointestinal tract mucosa is regulated by various factors. What local hormone can affect this process?
a. Endorphin
b. Bradykinin
c. Angiotensin
d. Calcitriol
e. Gastrin

1127. 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. Celecoxib
b. Diclofenac sodium
c. Fentanyl
d. Atorvastatin
e. Hydrochlorothiazide

1128. Bioavailability of a powder depends on the degree of comminution of the substance. The following value must be measured:
a. Solution density
b. Dispersion
c. Particle mass
d. Concentration
e. Particle volume

1129. Which of the drugs listed below quickly arrests angina pectoris attack when taken sublingually?
a. Convallariae glycoside
b. Lisinopril
c. Digoxin
d. Amiodarone
e. Nitroglycerine

1130. A patient has pulmonary edema. What drug must be prescribed in this case to reduce the volume of circulating blood?
a. Nitroglycerin
b. Metoprolol
c. Magnesium sulfate
d. Aminazine (Chlorpromazine)
e. Furosemide

1131. 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. Meat-extract agar
b. Blood agar
c. Yolk-salt agar
d. Bismuth sulfite agar

e. Sugar agar

1132. A patient has bradycardia, moderate hypotension, decreased basal metabolism, and edemas. What disorder is the likely cause of these signs?

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

1133. 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. Solubilization
b. Synergism
c. Sensitization
d. Colloid protection
e. Syneresis

1134. 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. Acid-base titration
b. Complexonometry
c. Argentometry
d. Iodometry
e. Permanganatometry

1135. 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
b. 1/2
c. 1/3
d. 1/5
e. 1/4

1136. A man came to a doctor complaining of a severe joint pain. Urinalysis shows increased levels of uric acid, which indicates:

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

1137. Plantago major inflorescence grows at the apex, its rachis is long, with sessile flowers. Name this type of inflorescence:

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

1138. 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. Progesterone
b. Adrenaline
c. Testosterone
d. Insulin
e. Folliculin

1139. Long-term use of antibiotics can result in development of dysbiosis. What method can detect

intestinal dysbiosis?
a. Patient interview
b. Allergy testing
c. Serology
d. Gnotobiotic experiments
e. Bacteriology

1140. 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. Roots
b. Fern rhizomes
c. Adventitious roots
d. Leaves
e. Stems of dicotyledons

1141. 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. Synthesis of bile acids and cholesterol
c. Synthesis of nucleic acids and phospholipids
d. Decarboxylation and transamination of amino acids
e. Synthesis of steroid hormones and cholesterol

1142. What cations of the fifth analytical group (acid-base classification) form colored hydroxides when precipitated with a group reagent?
a. Ag^+, Al^3+
b. Fe^2+, Fe^3+
c. Sn^2+, Sr^2+
d. Na^+, K^+
e. Ca^2+, Ba^2+

1143. A man presents with signs of albinism: blonde hair, extreme photosensitivity, impaired vision. What amino acid metabolism is disturbed in the patient?
a. Proline
b. Histidine
c. Methionine
d. Tyrosine
e. Valine

1144. 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. Prednisolone
c. Loratadine
d. Ranitidine
e. Tannin

1145. 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. Codeine phosphate
b. Naloxone hydrochloride
c. Omnopon
d. Riboflavin
e. Ketorolac

1146. A specialist of the analytical laboratory performs direct iodometric determination of ascorbic acid. What indicator is used in this case?
a. Starch
b. Methyl orange

c. Phenolphthalein
d. Methyl red
e. Diphenylamine

1147. 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. Fetotoxic
b. Teratogenic
c. Sensitizing
d. Mutagenic
e. Embryotoxic

1148. 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. Glucose
b. Amino acids
c. Hydrochloric acid
d. Bile acid
e. Cholesterol

1149. A pharmacy produces eye drops and dispenses them into sterile vials. What method should be used to sterilize the vials?
a. Dry heat box
b. Disinfectant solutions
c. Boiling
d. Autoclaving
e. Ultraviolet irradiation

1150. What parameter is determined during a blood test for erythrocyte sedimentation rate?
a. Sedimentation stability
b. Aggregate stability
c. Coagulation threshold
d. -
e. Kinetic stability

1151. 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. Lyophobic
b. Free disperse
c. Bound disperse
d. Hydrophilic
e. Lyophilic

1152. Certain amino acids decarboxylate in large intestine producing toxic substances. What compound is produced from ornithine?
a. Arginine
b. Phenol
c. Lysine
d. Indole
e. Putrescine

1153. What integumentary tissue of roots consists of cells with thin cellulose membranes and outgrowths - root hairs?
a. Rhizoderm (epiblem)
b. Periderm
c. Phelloderm
d. Pleroma

e. Periblem

1154. 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. Sodium sulfate
d. Calcium chloride
e. Sodium bromide

1155. 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. Concentration galvanic cell
b. Chemical galvanic cell
c. Galvanic cell without ion transfer
d. Galvanic cell with ion transfer
e. Reversible galvanic cell

1156. A Gram stained smear shows large oval violet cells that form pseudomycelium. Name these microorganisms:

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

1157. Air contamination with pathological microorganisms can be determined by the presence of indicator bacteria. Specify the bacteria that indicate immediate epidemiologic danger:

a. Sarcinae
b. Mold fungi
c. Micrococci
d. Yeast fungi
e. Hemolytic streptococci

1158. A patient, who was prescribed famotidine to treat peptic ulcer disease, came to the pharmacy. What is this drug's mechanism of action?

a. Inhibition of hydrogen potassium ATPase
b. H1-histamine receptor blockade
c. Ganglionic receptor blockade
d. Muscarinic receptor blockade
e. H2-histamine receptor blockade

1159. What pharmacological effect of acetylsalicylic acid allows using it for prevention of thrombosis in patients with ischemic heart disease?

a. Ulcerogenic
b. Analgesic
c. Antipyretic
d. Antiaggregant
e. Anti-inflammatory

1160. 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 K
c. Vitamin D
d. Vitamin F
e. Vitamin C

1161. Both scientific and folk medicine uses medicinal plant Glycyrrhiza glabra L. What part of the plant is harvested?

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

1162. Inhibitors of a certain enzyme from amines metabolism are used to treat depression. What enzyme is inhibited to achieve this effect?

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

1163. Hormones regulate numerous metabolic processes. What hormone activates glycogen synthesis?

a. Insulin
b. Adrenaline
c. Oxytocin
d. Vasopressin
e. Thyroxine

1164. 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. Achillea millefolium
b. Taraxacum officinale
c. Helianthus annuus
d. Artemisia absinthium
e. Bidens tripartita

1165. 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. Desorption
b. Cohesion
c. Adhesion
d. Recuperation
e. Adsorption

1166. Which pair of substances can produce an emulsion when mixed together?

a. Silicon dioxide and water
b. Soybean oil and water
c. Silver nitrate and water
d. Menthol and camphor
e. Urea and water

1167. 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 yellow precipitate
b. Formation of a black precipitate
c. Release of a characteristic odor
d. Formation of a blue precipitate
e. Formation of a white precipitate

1168. Endocrinological analysis detects growth hormone deficiency in a schoolboy. What pathology can develop in the child?

a. Pituitary gigantism
b. Pituitary nanism

c. Pituitary cachexia
d. Adiposogenital dystrophy
e. Acromegaly

1169. 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. Glucagon
b. Insulin
c. Aldosterone
d. Estradiol
e. Testosterone