1. A woman with candidiasis was prescribed an antifungal drug that disrupts the synthesis of ergosterol, but can cause dyspeptic disorders (diarrhea, nausea), hepatotoxicity, and headache as its side effects. What drug is it?
a. Albendazole
b. Acyclovir
c. Fluconazole
d. Metronidazole
e. Clarithromycin

2. Berberis vulgaris has spines that are modifications of:
a. Leaves
b. Petioles
c. Stems
d. Rachises
e. Stipules

3. A sample of medicinal raw material was inoculated on the Sabouraud medium in order to detect phytopathogenic microorganisms in it. What microorganisms are detected this way?
a. Bacteria
b. Viruses
c. Fungi
d. Protozoa
e. Actinomycetes

4. What antiprotozoal drug has anti-Helicobacter pylori effect?
a. -
b. Metronidazole
c. Rifampicin
d. Albendazole
e. Isoniazid

5. A doctor has prescribed benzylpenicillin for the treatment of a surgical patient with numerous abscesses of staphylococcal etiology. What is the mechanism of action of this antibiotic?
a. Inhibition of cytoplasmic membrane functions
b. Disruption of ribosomal protein synthesis
c. Disruption of nucleic acid synthesis
d. Inhibition of DNA topoisomerases
e. Disruption of cell wall synthesis

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

7. What anticholinesterase agent can be used to stimulate intestinal peristalsis in the patients during the postoperative period?
a. Salbutamol
b. Metoprolol
c. Neostigmine methylsulfate
d. Suxamethonium chloride
e. Adrenaline tartrate

8. Microbiological testing of vaginal suppositories shows that they do not meet the requirements of the Pharmacopoeia. What microflora was detected in the suppositories, causing this conclusion?
a. Pseudomonas aeruginosa
b. Lactobacilli

c. Micrococci
d. Sarcina
e. Tetracocci

9. For tetanus prevention a certain toxin is used. This toxin is being inactivated with formaldehyde (0.4%) under the temperature of 39^oC over the course of 4 weeks. Name the resulting preparation.
a. Antitoxic serum
b. Anatoxin
c. Immunoglobulin
d. Killed vaccine
e. Adjuvant

10. A pharmaceutical company is developing a new antitumor drug that targets an enzyme that takes part in DNA replication. What enzyme is targeted by this drug?
a. RNA polymerase
b. Topoisomerase
c. Aminoacyl-tRNA synthetase
d. Reverse transcriptase
e. Peptidyl transferase

11. What structures of a flower originate from the stem?
a. Stamens and pistils
b. Pedicel and receptacle
c. Calyx and stamens
d. Calyx and corolla
e. Receptacle and perianth

12. What principle is used when calculating the phase transition temperature at different pressure?
a. Trouton rule
b. Clausius-Clapeyron equation
c. Mendeleev-Clapeyron equation
d. Konovalov rules
e. Gibbs phase rule

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

14. A plant has essential oil glands, its fruit is an achene, its inflorescence is a flat capitulum. What plant family can be characterized by such features?
a. Lamiaceae
b. Solanaceae
c. Scrophylariaceae
d. Rosaceae
e. Asteraceae

15. A flower has many stamens, fused together by filaments into several bundles. What type of androecium is it?
a. Polyadelphous
b. Didynamous
c. Monadelphous
d. Tetradynamous
e. Diadelphous

16. Disperse systems can be distinguished from true solutions by the bluish glow of colloidal solutions

against a dark background when illuminated from the side. Name this phenomenon.
a. Emission
b. Scattering
c. Chemiluminescence
d. Fluorescence
e. Opalescence

17. After a long course of antibiotic therapy, the patient developed a complication characterized by the formation of white coating on the oral mucosa. Microscopy of swabs from the affected areas reveals oval budding microorganisms. Inoculation of the obtained material on the Sabouraud medium results in growth of smooth white colonies. What drug should be used for the etiotropic treatment of this disease?
a. Doxycycline
b. Albendazole
c. Isoniazid
d. Fluconazole
e. Acyclovir

18. A 45-year-old man has been hospitalized with intense pain in the right hypochondrium. He was diagnosed with cholelithiasis accompanied by biliary colic. What drug should be prescribed in this case to eliminate the pain syndrome?
a. Drotaverine hydrochloride
b. Bisacodyl
c. -
d. Almagel
e. Pancreatin

19. Select from the list a quantitative characteristic of Brownian motion.
a. Resistance of the medium
b. Diffusion coefficient
c. Coefficient of proportionality
d. Coefficient of friction
e. Average particle displacement over time

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

21. In the process of studying a new lipophilic compound, it was established that after glucuronidation it rapidly excretes with urine. What is the significance of glucuronidation in drug metabolism?
a. Intensifying breakdown and absorption in the stomach
b. Strengthening plasma protein binding
c. Increasing water solubility for renal excretion
d. Preventing binding to the target receptor
e. Increasing lipophilicity to improve absorption

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

23. What product forms as a result of aldehydes and ketones reacting with primary amines?

a. Azomethine
b. Thiol
c. Nitrile
d. Alcohol
e. Diazine

24. A patient with arterial hypotension accompanied by collapse was administered phenylephrine hydrochloride to increase the blood pressure. What receptors are stimulated by this drug?
a. Muscarinic acetylcholine receptors
b. alpha-adrenergic receptors
c. Angiotensin receptors
d. Nicotinic acetylcholine receptors
e. beta-adrenergic receptors

25. A solution contains aluminum, potassium, and sodium cations. Into this solution a small amount of ammonium hydroxide and alizarin solution was added, resulting in production of a bright red precipitate (varnish). What ion has been detected as the result of this reaction?
a. Aluminum
b. Sodium
c. Calcium
d. Barium
e. Potassium

26. A 15-year-old girl complains of general weakness, dizziness, and frequent fainting spells. She does not eat enough. Recently, she has been noticing a distortion of taste, a desire to eat chalk and raw minced meat. Her menstruations have been occurring since the age of 13 and are profuse and irregular. What substance causes sideropenic syndrome if its levels in the human body are low?
a. Folic acid
b. Copper
c. Iron
d. Hemosiderin
e. Vitamin B_12

27. What titrimetric method of analysis can be used for quantification of magnesium chlorides in a mixture that contains both potassium and magnesium chlorides?
a. Permanganatometry
b. Argentometry
c. Complexonometry
d. Mercurometry
e. Nitritometry

28. Allopurinol is used to reduce the formation of uric acid in the treatment of gout. What enzyme is inhibited by this medicine?
a. Amylase
b. Catalase
c. Xanthine oxidase
d. Arginase
e. Lactate dehydrogenase

29. What functional groups are present in the cyclic forms of ribose and deoxyribose?
a. Hydroxylic and carboxylic
b. Hydroxylic and aldehyde
c. Only aldehyde
d. Only hydroxylic
e. Only carboxylic

30. A 54-year-old man with 4-year-long history of chronic glomerulonephritis and 2-year-long history of persistent arterial hypertension made an appointment with a doctor. What substance synthesized in the kidneys plays an important role in the development of arterial hypertension in this patient?

a. Nitric oxide
b. Erythropoietin
c. Vitamin D
d. Aldosterone
e. Renin

31. A patient has been admitted to the hematology department of a hospital. He has history of frequent cases of acute respiratory viral infections and tonsillitis. Examination reveals enlarged lymph nodes. Blood test results: anemia, lymphocytosis, a small number of lymphoblasts, and Gumprecht shadows in the blood smear. What pathology has most likely occurred in this patient?
a. Agranulocytosis
b. Chronic lymphocytic leukemia
c. Multiple myeloma
d. Lymphogranulomatosis
e. Chronic myeloid leukemia

32. What compound contains a primary aromatic amino group?
a. C_6H_5-NH_2 (aniline)
b. (C_6H_5)_3N (triphenylamine)
c. (CH_3)_2NH (dimethylamine)
d. (CH_3)_3N (trimethylamine)
e. (CH_3)_3C-NH_2 (tert-butylamine)

33. Protein-containing liquids, where proteins must remain undenatured, undergo sterilization at the temperature of 56-58^oC in several 60-minute-long sessions over the course of 5 days. What method of sterilization is it?
a. Pasteurization
b. Moist heat sterilization
c. Autoclaving
d. Flame sterilization
e. Tyndallization

34. When carbohydrate intake is excessive, insulin stimulates conversion of carbohydrates into lipids in the cells of adipose tissue. What biochemical process enables this conversion?
a. Synthesis of higher fatty acids
b. Gluconeogenesis
c. Uric acid synthesis
d. Heme synthesis
e. Lipolysis

35. When harvesting inflorescences, it was determined that their main axis was well developed and the flowers were almost at the same level, despite being attached to peduncles of varying length. What type of inflorescence is it?
a. Spike
b. Umbel
c. Corymb
d. Botryoid
e. Flat capitulum

36. A patient complains of headache episodes with nausea and vomiting. During examination, patient's blood pressure - 180/100 mm Hg, blood glucose levels - 14.8 mmol/L. Magnetic resonance tomography detects pituitary adenoma. What pathology has caused the development of hyperglycemia in this patient?
a. Pituitary dwarfism
b. Hypothyroidism
c. Diabetes insipidus
d. Addison disease
e. Cushing disease

37. What cations are present in a solution if, after adding dimethylglyoxime (Chugaev reagent) and ammonia buffer solution to it, a bright crimson intracomplex compound forms as a result?
a. Cobalt cations
b. Calcium cations
c. Nickel cations
d. Copper cations
e. Aluminum cations

38. What reaction can be used to identify multiple bonds in organic compounds?
a. Hofmann rearrangement
b. Claisen condensation
c. Friedel-Crafts alkylation
d. Wagner reaction
e. Kucherov reaction

39. What type of pharmaceutical interaction is it, when absorption of tetracycline drugs becomes reduced if they are taken simultaneously with antacids?
a. Functional antagonism
b. Pharmacokinetic incompatibility
c. Synergism
d. Pharmacodynamic incompatibility
e. Pharmaceutical incompatibility

40. Monosaccharides can be easily oxidized, but depending on the nature of the oxidant and the conditions under which oxidation occurs, different products will form. What compound forms when D-glucose is oxidized using bromine water?
a. D-Glucaric acid
b. Bromoderivative of D-glucose
c. D-glucose osazone
d. D-Gluconic acid
e. D-Glucuronic acid

41. A 65-year-old man has been diagnosed with benign prostatic hyperplasia. What adrenoblocker should he be prescribed?
a. -
b. Metoprolol
c. Doxazosin mesylate
d. Adrenaline tartrate
e. Propranolol hydrochloride

42. Microscopy of the leaf epidermis reveals stinging hairs with a tall multicellular base, into which the base of an ampoule-shaped living cell with a small head filled with formic acid is immersed. What plant can be characterized by such emergences?
a. Bidens tripartita
b. Achillea millefolium
c. Chelidonium majus
d. Urtica dioica
e. Artemisia absinthium

43. A 35-year-old patient complains of intense thirst, headache, and irritability. The 24-hour fluid intake is 9 liters. The 24-hour diuresis is increased. The patient was diagnosed with diabetes insipidus. This pathology is associated with impaired production of a certain hormone. Name this hormone.
a. Glucocorticoids
b. Catecholamines
c. Aldosterone
d. Vasopressin
e. Thyroxine

44. An alkali was added into the solution being analyzed. When heated, the solution produced a gas.

This gas changes the color of a moist litmus paper from red to blue, which indicates the presence of the following ions in the solution:
a. Cl^-
b. Bi^3+
c. CO_3^2-
d. Pb^2+
e. NH_4^+

45. What structures enable the release of weak solutions of mineral (or, less often, organic) substances in the form of droplets and are arranged in groups on the serrations of the leaf margin?
a. Hydathodes
b. Osmophores
c. Emergences
d. Idioblasts
e. Laticifers

46. What is the name of the five-membered heterocycle that contains nitrogen heteroatoms of the pyrrole and pyridine type?
a. Piperidine
b. Triazole
c. Pyrazolidine
d. Thiazole
e. Pyrazole

47. A newborn has been diagnosed with Down syndrome, accompanied by mental retardation, short stature, short fingers and toes, and Mongoloid slant of the eyes. Karyotyping detects trisomy 21. What type of hereditary pathology is Down syndrome?
a. Molecular genetics disease
b. Chromosome abnormality
c. Blastopathy
d. Gametopathy
e. Fetopathy

48. What bioactive peptide is a major intracellular antioxidant and performs coenzyme functions?
a. Bradykinin
b. Oxytocin
c. Liberine
d. Glutathione
e. Hemoglobin

49. Spore formation helps microbes survive in the environment. What microorganisms are spore formers?
a. Clostridium
b. Staphylococcus
c. Bacteroides
d. Peptostreptococcus
e. Peptococcus

50. A plant is completely submerged in water. What ecological group does this plant belong to?
a. Succulents
b. Hydrophytes
c. Hygrophytes
d. Xerophytes
e. Mesophytes

51. What is benzene formula?
a. C_6H_6
b. C_6H_10
c. C_6H_8

d. C_4H_4
e. $C_{10}H_8$

52. A 48-year-old patient complains of thirst, frequent urination, dryness of skin and mucosa, and trophic ulcers that appeared on his legs. Examination detects blood glucose levels of 16 mmol/L and glucose in urine. What disease has occurred in the patient?
a. Diabetes mellitus
b. Kidney failure
c. Diabetes insipidus
d. Nephrogenic diabetes insipidus
e. Insulinoma

53. Amylolytic enzymes catalyze hydrolysis of polysaccharides and oligosaccharides. They have an effect on the following chemical bond:
a. Amide bond
b. Hydrogen bond
c. Phosphodiester bond
d. Glycosidic bond
e. Peptide bond

54. What indicator is used in titrimetric determination of substances by means of mercurimetry (complexometry)?
a. Potassium chromate
b. Starch
c. Methyl orange
d. Phenolphthalein
e. Diphenylcarbazide

55. 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. Creatine
b. Protein
c. Lactic acid
d. Glucose
e. Indican

56. What end product forms as a result of beta-oxidation of fatty acids with an odd number of carbon atoms?
a. Palmitoyl-CoA
b. Acetyl-CoA
c. Stearoyl-CoA
d. Acetoacetyl-CoA
e. Propionyl-CoA

57. What reagent can be used for identification of lead cations according to the State Pharmacopoeia of Ukraine?
a. Formaldehyde solution
b. Potassium iodide
c. Sodium sulfite
d. Urea
e. Sodium hydroxide

58. Name the phenomenon when aerosol particles move in the direction of decreasing temperature.
a. Electrophoresis
b. Sedimentation
c. Photophoresis
d. Thermophoresis
e. Peptization

59. Ledum palustre leaves are leathery, with a flat elongated leaf blade, curved downward edges, and brown hairs on the underside. What family does this plant belong to?
a. Fabaceae
b. Lamiaceae
c. Brassicaceae
d. Rosaceae
e. Ericaceae

60. A patient has been hospitalized with the diagnosis of diabetic hyperglycemic coma. The patient's breathing is slow, deep, and noisy. The inhalation phase is longer than the exhalation phase. What type of breathing has developed in the patient?
a. Apneic breathing
b. Cheyne-Stokes breathing
c. Gasping
d. Kussmaul breathing
e. Biot breathing

61. When studying the chemical properties of an organic compound, it was established that it exhibits basic properties and easily undergoes halogenation and diazotization reactions. What compound meets these criteria?
a. Toluene
b. Benzene
c. Naphthalene
d. Phenol
e. Aniline

62. What pair of compounds can be distinguished from each other using the silver mirror reaction?
a. Propane and propene
b. Ethanol and ethylene glycol
c. n-Butane and isobutane
d. Propanal and propanone
e. 1,3-Butadiene and 1,2-butadiene

63. The fructose molecule belongs to ketoses. What phenomenon causes fructose to take part in the "silver mirror" reaction?
a. Condensation
b. Epimerization
c. Mutarotation
d. Dehydration
e. Conformation

64. What medium is used in quantification of halide ions by means of Volhard method (thiocyanometry)?
a. Strongly alkaline
b. Weakly alkaline
c. Phosphate acid
d. Neutral
e. Nitric acid

65. Hepatitis B patients and hepatitis B carriers cannot be potential donors, because there is a risk of transmitting the infection to the recipient along with blood and blood products. What transmission route is characteristic of this infection?
a. Alimentary transmission
b. Parenteral transmission
c. Airborne-droplet transmission
d. Arthropod-borne transmission
e. Airborne-dust transmission

66. What fluid will cause plasmolysis of human blood cells, if it is mistakenly administered

intravenously?
a. 3.5% NaCl solution
b. 3.5% glucose solution
c. 0.9% glucose solution
d. 0.9% NaCl solution
e. Distilled water

67. What H_2-histamine blocker can be used to treat peptic ulcer disease of the stomach with increased secretory function?
a. Famotidine
b. Omeprazole
c. Drotaverine hydrochloride
d. Levocetirizine
e. Atropine sulfate

68. What law underlies the method of spectrophotometry in the ultraviolet region of the spectrum?
a. Beer-Bouguer-Lambert law
b. Stokes-Lommel law
c. Rayleigh law
d. Ohm law
e. Faraday law

69. A patient diagnosed with stomatitis was prescribed a fat-soluble vitamin preparation that takes part in redox processes and accelerates mucosal epithelization. What drug is it?
a. Retinol acetate
b. Folic acid
c. Ascorbic acid
d. Ergocalciferol
e. -

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

71. What is the typical sign of the initial stage of acute renal failure?
a. Polyuria
b. Nocturia
c. Dysuria
d. Anuria
e. Pollakiuria

72. D-galactose reacts with an ammonia solution of silver oxide. What functional group makes this reaction possible?
a. Ester group
b. Carboxyl group
c. Aldehyde group
d. Ether group
e. Hydroxyl group

73. Bacteriology of secretions from the patient's wound, stained using the Gram technique, revealed purple spherical microorganisms, arranged like a grape cluster. What microorganisms are the most likely cause of this disease?
a. Salmonella typhimurium
b. Proteus vulgaris
c. S. aureus
d. Neisseria

e. E) coli

74. After being stung by bees, the patient developed Quincke's edema. What drug should the patient be urgently administered for the treatment of this condition?
a. Atropine sulfate
b. Adrenaline tartrate
c. Diphenhydramine hydrochloride
d. Propranolol hydrochloride
e. Furosemide

75. A 45-year-old woman developed an acute inflammatory disease of the upper respiratory tract and eyes during the season of flowering. She presents with hyperemia, edema, and mucous discharge. What type of leukocytosis would be most characteristic in this case?
a. Monocytosis
b. Eosinophilia
c. Neutrophilia
d. Basophilia
e. Lymphocytosis

76. A Gram-stained smear shows large oval violet cells that form pseudomycelium. Name these microorganisms.
a. Plasmodium malariae
b. Mucor fungi
c. Candida fungi
d. Actinomycetales
e. Penicillium fungi

77. What method of chromatographic analysis can be used for separation, identification, and quantification of methanol and ethanol in a mixture?
a. Gas-liquid chromatography
b. Planar chromatography
c. Precipitation chromatography
d. Paper chromatography
e. Ion exchange chromatography

78. A patient diagnosed with arterial hypertension has been prescribed a drug with an antihypertensive, antianginal, and antiarrhythmic effect. Name this drug.
a. Metoprolol
b. Clonidine
c. Dopamine hydrochloride
d. Fenoterol
e. Adrenaline tartrate

79. After adding a barium chloride solution to the solution being analyzed, a white precipitate, insoluble in acids and alkalis, formed. What anions are present in the analyzed solution?
a. Nitrate anions
b. Chloride anions
c. Phosphate anions
d. Sulfate anions
e. Carbonate anions

80. During practice, a student was tasked with classifying plants, dividing them into monocotyledons and dicotyledons. What family of plants belongs to the monocotyledons?
a. Rosaceae
b. Lamiaceae
c. Fabaceae
d. Poaceae
e. Brassicaceae

81. A pharmacy has decided to use the biological method to test the quality of instrument sterilization in an autoclave. What microorganisms should be used for this purpose?
a. Bacillus subtilis
b. Borrelia recurrentis
c. Yersinia pestis
d. Salmonella typhi
e. Streptococcus pyogenes

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

83. Microscopy of a rhizome detects periphloematic vascular bundles. What plant does this rhizome belong to?
a. Convallaria majalis
b. Elymus repens
c. Potentilla erecta
d. Dryopteris filix-mas
e. Acorus calamus

84. Which one of the listed solutions will have the highest Van't Hoff isotonic coefficient, if their molar concentration and temperature are the same?
a. C_6H_12O_6
b. CaCO_3
c. MgCl_2
d. AlBr_3
e. LiCl

85. 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 besides its diuretic effect?
a. Potassium-sparing
b. Antispasmodic
c. Sedative
d. Analgesic
e. Irritant

86. What amine causes a positive isonitrile reaction?
a. Diethylamine
b. N,N-Dimethylamine
c. Benzylamine
d. Tetramethylammonium chloride
e. Diphenylamine

87. Polarimetry is used for determining optically active substances. What substance can be determined, using this method?
a. Copper sulfate
b. Calcium nitrate
c. Glucose
d. Potassium iodide
e. Sodium chloride

88. People, who were in the building during a fire, suffer from carbon monoxide poisoning. What type of hypoxia can be observed in this case?
a. Circulatory hypoxia
b. Hypoxic hypoxia

c. Tissue hypoxia
d. Hemic hypoxia
e. Respiratory hypoxia

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

90. What specific reagent is used for identification of Fe^2+ cations?
a. H_2SO_4
b. NaOH
c. K_3[Fe(CN)_6]
d. K_2Na[Co(NO_2)_6]
e. NH_4OH

91. A patient diagnosed with arterial hypertension was prescribed lisinopril. What is the mechanism of action of this drug?
a. Blockade of calcium channels in vascular smooth muscle
b. Stimulation of alpha_2-adrenergic receptors
c. Inhibition of angiotensin-converting enzyme
d. Stimulation of beta-adrenergic receptors
e. Blockade of beta-adrenergic receptors

92. A 65-year-old man developed third-degree atrioventricular block. What medicine should be prescribed for this patient?
a. Verapamil hydrochloride
b. Metoprolol
c. Digoxin
d. Amiodarone hydrochloride
e. Atropine sulfate

93. A patient was prescribed an antiplatelet agent that has an effect on thromboxane A_2 formation in platelets. What drug is it?
a. -
b. Prednisolone
c. Adrenaline tartrate
d. Acetylsalicylic acid
e. Menadione

94. What titrants are used in quantification of iodides by means of back titration, using the Volhard method?
a. Mercury(I) nitrate, ammonium thiocyanate
b. Mercury(II) nitrate, ammonium thiocyanate
c. Silver nitrate, ammonium thiocyanate
d. Silver nitrate, sodium chloride
e. Mercury(I) nitrate, potassium thiocyanate

95. What compound is a base for organic dyes and belongs to isolated polynuclear arenes?
a. Anthracene
b. Phenanthrene
c. Cumene
d. Triphenylmethane
e. Benzene

96. What is the mechanism of action of antiviral drug acyclovir?
a. Blockade of cell wall synthesis

b. Inhibition of protein synthesis
c. Antagonism with para-aminobenzoic acid
d. Increasing the cell membrane permeability
e. Inhibition of nucleic acid synthesis

97. Administration of adrenaline increases glucose levels in the blood. What process is mainly activated in this case?
a. Pentose phosphate pathway
b. Glycogenolysis
c. Lipogenesis
d. Glycogenesis
e. Gluconeogenesis

98. What heterocycle has acidophobic properties?
a. Pteridine
b. Quinoline
c. Pyrimidine
d. Pyrrole
e. Thiophene

99. What inflorescences are most typical of the Brassicaceae family?
a. Raceme, panicle
b. Round or flat capitulum
c. Compound corymb, compound umbel
d. Spadix, spike
e. Corymb, umbel

100. A patient has pulmonary edema. What drug must be prescribed in this case to reduce the volume of circulating blood?
a. Metoprolol
b. Magnesium sulfate
c. Amiodarone hydrochloride
d. Furosemide
e. Verapamil hydrochloride

101. What enzyme is used to synthesize genes from matrix RNA on DNA in RNA-containing viruses?
a. Endonuclease
b. Exonuclease
c. DNA ligase
d. Helicase
e. Reverse transcriptase

102. Which one of the listed heterocyclic compounds exhibits the strongest basic properties?
a. Thiophene
b. Pyridine
c. Pyrrole
d. Pyrrolidine
e. Furan

103. The manufacturer has stated that the half-life of ibuprofen is 2 hours. A patient has been prescribed 400 mg of the drug. How much ibuprofen (mg) will remain in the patient's body 6 hours after taking this dose of the drug?
a. 0
b. 150
c. 25
d. 100
e. 50

104. What is characteristic of benign tumors?

a. Expansive growth
b. Infiltrating growth
c. Cancer cachexia
d. Invasion into the surrounding tissues
e. Metastasis

105. A man diagnosed with epilepsy has been taking phenobarbital for a long time. Over time, he has noticed a decrease in the therapeutic effect of the drug - he has developed tolerance to this drug. What is the mechanism of developing tolerance to phenobarbital?
a. Accumulation of the substance in the body
b. Increased sensitivity of receptors
c. Acceleration of biotransformation
d. Inhibition of biotransformation
e. Weakening of the absorption process

106. A person has been hospitalized with the diagnosis of malaria. What route of infection transmission is characteristic of this disease?
a. Arthropod-borne transmission
b. Airborne and droplet transmission
c. Fecal-oral transmission
d. Indirect contact transmission
e. Direct contact transmission

107. When a pharmaceutical company was manufacturing an enzyme drug, a violation of the technological process occurred: the drug was heated to 85^oC. What changes will be observed in its enzyme activity?
a. Increased enzyme activity due to increased molecular motion
b. Minor changes in enzyme activity due to enzyme thermostability
c. Temporary decrease in enzyme activity that later resumes after cooling
d. Impaired structure of metal ions in the active site
e. Protein denaturation and complete loss of enzyme activity

108. In cases of methanol poisoning, one of the treatment methods requires administering ethanol (orally or intravenously) in doses large enough to cause intoxication in a healthy person. Why is this treatment method effective?
a. Ethanol breaks down faster than methanol
b. Ethanol competes with methanol for the active site of alcohol dehydrogenase
c. Ethanol inactivates alcohol dehydrogenase
d. Ethanol blocks alcohol dehydrogenase coenzyme
e. Ethanol inhibits methanol diffusion

109. Phellogen forms from pericycle or ground tissue that develops meristematic activity. What type of tissue is phellogen?
a. Meristematic
b. Secretory
c. Mechanical
d. Vascular
e. Dermal

110. What indicator is used in argentometric determination of chloride ions in Mohr's method?
a. Eosin
b. Potassium chromate
c. Methyl red
d. Diphenylcarbazone
e. Fluorescein

111. Analyzis of a medicinal plant shows that its leaves are collected into a basal rosette, the leaves themselves are broadly ovate or elliptic with arcuate venation, while the flowers are small, unremarkable, and assembled into an inflorescence - a dense spike. What plant can be characterized

by such features?
a. Plantago major
b. Vinca minor
c. Althaea officinalis
d. Taraxacum officinale
e. Chelidonium majus

112. In the cells of eukaryotic organisms, the DNA is bound to proteins. What proteins are bound to the DNA molecule and stabilize it?
a. Histones
b. Albumins
c. Globulins
d. Interferons
e. Glutelins

113. A 55-year-old patient was prescribed an organic nitrate drug for rapid relief of angina pectoris attacks. Select this drug from the list.
a. Glycerol trinitrate
b. Verapamil hydrochloride
c. Propranolol hydrochloride
d. -
e. Digoxin

114. What method of instrumental analysis can be used for quantification of hydrochloric and boric acids in a mixture?
a. Chromatography
b. Spectrophotometry
c. Polarimetry
d. Infrared spectroscopy
e. Potentiometry

115. Morphological analysis shows that the length of a leaf blade exceeds 1.5-2 times its width and the widest part is located closer to the base. What shape of the leaf blade is it?
a. Elliptic
b. Ovate
c. Narrowly ovate
d. Lanceolate
e. Linear

116. A doctor prescribed zopiclone to a patient complaining of insomnia. This drug has a hypnotic effect, because it interacts with certain receptors. Name these receptors.
a. Serotonin and opioid receptors
b. alpha- and beta-adrenergic receptors
c. Muscarinic and nicotinic acetylcholine receptors
d. H_1- and H_2-histamine receptors
e. Benzodiazepine and GABA receptors

117. A bodybuilder athlete came to a pharmacy complaining of hyperthermia. To improve his athletic performance, he used the banned doping compound 2,4-dinitrophenol that uncouples oxidative phosphorylation. What effect of this compound on mitochondria can explain these symptoms?
a. Decreased oxygen consumption and inhibition of ATP synthesis
b. Increased oxygen consumption and activation of ATP synthesis
c. Increased acetyl-CoA levels and stimulation of tricarboxylic acid cycle
d. Decreased ATP synthesis and energy release in the form of heat
e. Increased use of ATP for cAMP synthesis

118. In human body, stable glucose levels are maintained by balanced levels of insulin and counterinsular hormones. What endocrine pathology causes development of persistent hypoglycemia?

a. Thyrotoxicosis
b. Pheochromocytoma
c. Cushing disease
d. Insulinoma
e. Acromegaly

119. What type of chromatography includes the gas-liquid chromatography?
a. Ion exchange chromatography
b. Gel chromatography
c. Distribution chromatography
d. Adsorption chromatography
e. Affinity chromatography

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

121. Pathogenic microorganisms can be characterized by the presence of enzymes of aggression that determine their virulence. Select an enzyme of aggression from the list below.
a. Carbohydrase
b. Hyaluronidase
c. Oxidase
d. Lyase
e. Transferase

122. What titrimetric methods can be used for quantification of streptocide (sulfanilamide, a primary aromatic amine) in a drug?
a. Nitritometry, argentometry
b. Complexonometry, nitritometry
c. Bromatometry, nitritometry
d. Permanganometry, bromatometry
e. Bromatometry, complexonometry

123. A 14-year-old boy, who has been suffering from bronchial asthma since childhood, after significant physical exertion developed shortness of breath and impaired respiratory rate and depth, characterized by difficult and prolonged exhalation. What pathological type of breathing has developed in this case?
a. Expiratory dyspnea
b. Biot's breathing
c. Gasping
d. Kussmaul breathing
e. Inspiratory dyspnea

124. What group reagent can be used to separate group III cations (acid-base classification), when conducting systematic analysis of a mixture?
a. Ammonia
b. Alkali and hydrogen peroxide
c. Barium chloride
d. Hydrochloric acid
e. Sulfuric acid

125. What is the structural formula for 3-chloropropene?
a. ClCH_2-CH=CH_2
b. ClCH=CH-CH_3
c. ClCH_2-CH=CH-CH_3

d. CH_2=CCl-CH_3
e. CH_2=CH-CH=CHCl

126. What side effect is characteristic of lisinopril?
a. Bronchospasm
b. Red urine
c. Orthostatic hypertension
d. Hyperglycemia
e. Dry cough

127. What drug inhibits hydroxymethylglutaryl-CoA reductase enzyme and reduces cholesterol synthesis?
a. Atorvastatin
b. Furosemide
c. Hydrochlorothiazide
d. Lisinopril
e. Amlodipine besylate

128. A 50-year-old patient has been hospitalized into the intensive care unit with complaints of weakness, shortness of breath, and constricting pain behind the sternum. Examination reveals that the pateint's condition is moderately severe, heart rate - 80/min, blood pressure - 130/85 mm Hg. ECG shows deep Q waves and ST segment elevation. Acutely increased activity of AST, CPK-MB, and troponins is observed in the blood. What pathological condition can be characterized by the described symptoms and laboratory test results?
a. Pericarditis
b. Myocarditis
c. Angina pectoris
d. Myocardial infarction
e. Pulmonary embolism

129. A patient was prescribed losartan potassium for treatment of arterial hypertension. What is the mechanism of action of this drug?
a. Blockade of angiotensin receptors
b. Calcium channel block
c. Inhibition of phosphodiesterase
d. Inhibition of angiotensin-converting enzyme
e. Activation of central alpha-adrenergic receptors

130. Species pectorales herbal tea contains pieces of bright yellow, sweet-tasting roots. What medicinal plant is it?
a. Glycyrrhiza glabra
b. Acorus calamus
c. Valeriana officinalis
d. Plantago major
e. Althaea officinalis

131. What group of broncholytics is used for treatment of patients with bronchial asthma?
a. beta-adrenergic blockers
b. Anticholinesterase drugs
c. Nicotinic agonists
d. Muscarinic agonists
e. beta_2-adrenergic agonists

132. After examination, a child was diagnosed with scarlet fever. What microorganism is the causative agent of this disease?
a. Actinomycete
b. Streptococcus
c. Klebsiella
d. Meningococcus

e. Staphylococcus

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

134. What electrode can be used as an indicator electrode in titration of bases?
a. Platinum electrode
b. Calomel electrode
c. Silver chloride electrode
d. Glass electrode
e. Quinhydrone electrode

135. What is the effect of electron-accepting substituents (type II substituents) on the course of electrophilic substitution (SE) reactions in arenes?
a. They slow down the reaction and are meta-directors
b. They slow down the reaction and are ortho- and para-directors
c. They speed up the reaction and are meta-directors
d. They speed up the reaction and are ortho- and para-directors
e. They have no effect on the reaction

136. After evaporation of the solution that is being analyzed, the remaining dry residue turns the colorless flame of the burner purple. What ions are present in the solution, as indicated by this reaction?
a. Sodium ions
b. Barium ions
c. Potassium ions
d. Lithium ions
e. Ammonium ions

137. Disperse systems can be divided into lyophilic and lyophobic ones, based on the intensity of interaction between the particles of the dispersed phase and the dispersion medium. What disperse system is lyophobic?
a. Clay dispersions
b. Foams
c. Surfactant solutions
d. Solutions of high-molecular compounds
e. Tannin solutions

138. On day 20 after a massive hemorrhage, the patient with an injury to the subclavian artery underwent a blood test. What blood test findings indicate an increase in erythropoiesis?
a. Hypochromia
b. Anisocytosis
c. Anisochromia
d. Poikilocytosis
e. Reticulocytosis

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

140. Urinalysis of a patient with diabetes mellitus detects glucosuria. What is the renal threshold for

glucose reabsorption?
a. 15 mmol/L
b. 10 mmol/L
c. 20 mmol/L
d. 5 mmol/L
e. 1 mmol/L

141. A 34-year-old woman with bronchitis has persistent, dry, non-productive cough. Her physician prescribed her a centrally acting antitussive drug. Select this drug from the list.
a. Ambroxol hydrochloride
b. Acetylcysteine
c. Glaucine hydrochloride
d. Mucaltin
e. Bromhexine hydrochloride

142. What monomer is the basis for natural rubber?
a. Propene
b. Isoprene
c. Ethene
d. 1-Butyne
e. Divinyl

143. In systematic analysis of group IV cations, hydrogen peroxide must be added along with the group reagent. Why must this substance be added?
a. For formation of hydroxo- and oxoanions of these elements at the highest oxidation degrees
b. For formation of peroxide compounds of these cations
c. For more complete precipitation of these cations
d. For destruction of hydrate complexes
e. For formation of hydroxo- and oxoanions of these elements at the lowest oxidation degrees

144. At a pharmaceutical factory, an alkaloid must be extracted from a herbal raw material. What would ensure effective extraction of this substance?
a. The substance must have different solubility in two different solvents
b. The extraction process must be carried out at a high temperature
c. The substance must enter into a chemical reaction with the solvent
d. Solvents must be miscible with each other
e. Solvents must have similar polarity values

145. What adsorption indicator is used in quantification of iodides by means of the Fajans method?
a. Methyl orange
b. Diphenylamine
c. Phenolphthalein
d. Eosin
e. Murexide

146. What laboratory glassware is used for dissolving an exactly measured out sample when preparing a primary standard solution?
a. Cylinder
b. Measuring glass
c. Test tube
d. Beaker
e. Measuring flask

147. What value is used when calculating the osmotic pressure of electrolyte solutions according to the Van 't Hoff's law?
a. Osmotic coefficient
b. Cryoscopic constant
c. Ebullioscopic constant
d. Activity coefficient

e. Isotonic coefficient

148. 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. Styloids

c. Crystalline sand

d. Cystoliths

e. Druses

149. Microscopy of plants detects parenchymal cells with thin membranes, a large nucleus, and a large number of ribosomes. What tissue is it?

a. Mechanical tissue

b. Meristematic tissue

c. Dermal tissue

d. Parenchyma

e. Secretory tissue

150. What is propene structural formula?

a. CH_3-CH=CH-CH_3

b. -

c. CH_3-CH_2-CH_3

d. CH_3-CH=CH_2

e. CH_3-CH_2-CH=CH-CH_3