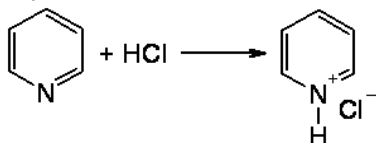


1. An excess of concentrated ammonium hydroxide is a group reagent for the cations of the VI analytical group (acid-base classification), namely Co^{2+} , Ni^{2+} , Cd^{2+} , Cu^{2+} , Hg^{2+} . As a result of this reaction the following substances are formed:

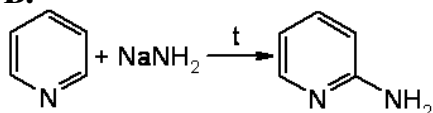
- A. Water-soluble ammonia complexes
- B. Hydroxides of acid-soluble cations
- C. Stained water-insoluble compounds
- D. Hydroxides of alkali-soluble cations
- E. Hydroxides of the cations insoluble in the excess of ammonium hydroxide

2. Which of the listed reactions demonstrates the basic properties of pyridine?

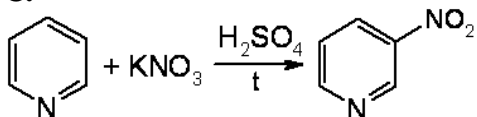
A.



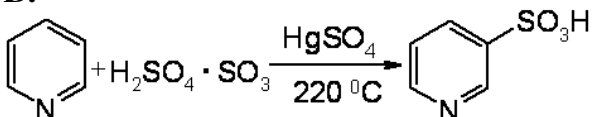
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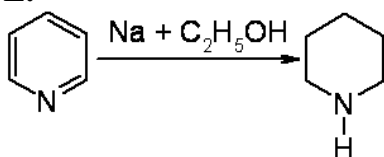
C.



D.



E.



3. A patient with stenocardia has been administered acetylsalicylic acid for:

- A. Antiplatelet effect
- B. Inhibition of blood fibrinolytic activity
- C. Aggregate effect
- D. Anti-inflammatory effect
- E. Increase in blood fibrinolytic activity

4. On the 4th day of treatment with indomethacin a male 55-year-old patient

developed gastric bleeding due to the ulceration of the gastric mucosa. Ulcerogenic effect of the drug is associated with a decrease in the activity of the following enzyme:

- A. Cyclooxygenase-1
- B. Cyclooxygenase-2
- C. Lipoxygenase
- D. Thromboxane synthetase
- E. Prostacyclin synthase

5. A patient with hypertensive crisis has been given an intravenous injection of clonidine. What mechanism underlies the antihypertensive effect of clonidine?

- A. Stimulation of presynaptic central α_2 -adrenoceptors
- B. Blockade of peripheral α_1 -adrenoceptors
- C. Blockade of β -adrenoceptors
- D. Blockade of *N*-cholinergic receptors
- E. Direct myotropic effect on blood vessels

6. A patient with ischemic heart disease has been administered inosine which is an intermediate metabolite in the synthesis of:

- A. Purine nucleotides
- B. Metalloproteins
- C. Lipoproteins
- D. Glycoproteins
- E. Ketone bodies

7. A patient with hypertensive crisis should be administered a diuretic as a part of complex therapy. What drug should be given the patient?

- A. Furosemide
- B. Diacarb
- C. Spironolactone
- D. Triamterene
- E. Amiloride

8. Rates of chemical reactions of the same order are compared by:

- A. Constant of chemical reaction rate
- B. Chemical reaction rate
- C. Endpoint of a reaction
- D. Change in the reactants concentration
- E. Change in the concentration of the reaction products

9. Consult a patient on which antihistamine drug **DOES NOT** have sedative and hypnotic effect:

- A. Loradatine
- B. Diphenhydramine
- C. Promethazine
- D. Suprastinum
- E. Tavegil (Clemastine)

10. Solutions of some electrolytes are used as medications. What is the maximum value of the isotonic coefficient for $MgSO_4$ solution?

- A. 2
- B. 4
- C. 3
- D. 5
- E. 7

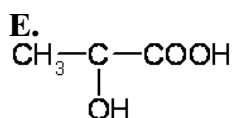
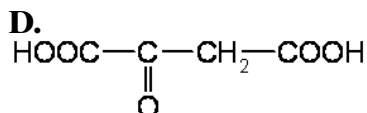
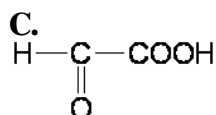
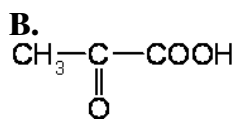
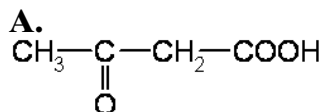
11. A patient with hypertension has been prescribed a drug that blocks angiotensin receptors. Specify this drug:

- A. Losartan
- B. Nifedipine
- C. Prazosin
- D. Captopril
- E. Apressin

12. A patient with gastric ulcer has been administered omeprazole. What is the mechanism of its action?

- A. Inhibition of H^+K^+ -ATPase
- B. Blockade of histamine H_2 -receptors
- C. M -cholinergic receptor blockade
- D. Neutralization of HCl
- E. Stimulation of mucus production

13. Which of these formulas corresponds with acetoacetic acid?



14. After taking phenacetin a patient developed acute sore throat, fever. Examination enabled doctors to make a diagnosis of necrotic angina and agranulocytosis. Agranulocytosis can be characterized by a decrease in the amount of the following WBCs:

- A. Neutrophils
- B. Eosinophils
- C. Basophils
- D. Lymphocytes
- E. Monocytes

15. A patient with a heart rhythm disorder has been given lidocaine. Apart from the local anesthetic effect, this drug has the following pharmacological effect:

- A. Antiarrhythmic
- B. Hypnotic
- C. Antipyretic
- D. Antidepressant
- E. Nootropic

16. 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. Habituation
- B. Dependence
- C. Sensibilization
- D. Cumulation
- E. Dysbacteriosis

17. It is not advisable to use antacids and iron supplements at the same time for the following reason:

- A. Malabsorption of iron
- B. Increased binding to plasma proteins
- C. Impaired deposition of iron in the body
- D. Increased intoxication with iron
- E. Accelerated elimination of iron

18. A patient with acute heart failure and cardiac glycosides intolerance was given an injection of dobutamine. What is the mechanism of its action?

- A. Stimulation of β_1 -adrenoceptors
- B. Stimulation of α_1 -adrenoceptors
- C. Blockade of K^+ -, Na^+ -ATPase
- D. Inhibition of phosphodiesterase activity
- E. Stimulation of M-cholinergic receptors

19. A female patient asked a pharmacist to recommend her a drug for headache with antiplatelet effect. Specify this drug:

- A. Acetylsalicylic acid
- B. Codeine phosphate
- C. Promedol
- D. Tramadol
- E. Fentanyl

20. A plant under examination has papilionaceous flowers. This plant belongs to the following family:

- A. *Fabaceae*
- B. *Scrofulariaceae*
- C. *Ranunculaceae*
- D. *Lamiaceae*
- E. *Asteraceae*

21. Microscopic analysis of a root revealed the following features: primary structure, endodermal cells with horseshoe-shaped areas, radial fascicle of the central cylinder, more than six xylem rays. Such root structure is typical for the following plants:

- A. Angiosperms, monocotyledons
- B. Angiosperms, dicotyledons
- C. Gymnosperms, conifers
- D. Gymnosperms, gnetalians
- E. Pteridosperms

22. Chronic pancreatitis is accompanied by the decreased synthesis and secretion of trypsin. This impairs the hydrolysis and absorption of the following substances:

- A. Proteins
- B. Lipids
- C. Polysaccharides
- D. Nucleic acids
- E. Disaccharides

23. Analysis of a plant revealed essential-oil glands with several layers of cells arranged in pairs. This allows for the possibility that the plant relates to the family:

- A. *Asteraceae*
- B. *Scrofulariaceae*
- C. *Solanaceae*
- D. *Apiaceae*
- E. *Lamiaceae*

24. In an emergency situation a scuba diver has quickly risen from the depths to the surface, which is against the rule. He is unconscious, exhibits respiratory failure and cardiac activity disorder as a result of decompression sickness. What complication may develop in the scuba diver?

- A. Gas embolism
- B. Fat embolism
- C. Air embolism
- D. Cellular embolism
- E. Thromboembolism

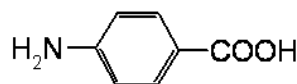
25. A patient has been hospitalized for chronic heart failure. Objectively: skin and mucous membranes are cyanotic, the patient has tachycardia, tachypnea. What type of hypoxia has developed in the patient?

- A. Circulatory
- B. Anemic
- C. Hemic
- D. Tissue
- E. Hypoxic

26. What are the indications for the use of naloxone?

- A. Acute intoxication with narcotic analgesics
- B. Heavy metal intoxication
- C. Intoxication with cardiac glycosides
- D. Intoxication with ergot alkaloids
- E. Atropine sulfate intoxication

27. Amino group of p-aminobenzoic acid is involved into reaction with the following reagent:



- A. HCl
- B. NH_4OH
- C. $NaOH$
- D. CH_3COONa
- E. KCN

28. A patient with renal colic has been administered a spasmolytic from the group of M-cholinergic antagonists as a part of the complex therapy. Specify this drug:

- A. Atropine
- B. Proserin
- C. Galantamine
- D. Dithylinum
- E. Benzo hexonium

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

- A. Oxytocin
- B. No-spa
- C. Progesterone
- D. Vikasolum
- E. Fenoterol

30. A patient with myocardial infarction has been administered intravenously a direct anticoagulant, namely:

- A. Heparin
- B. Neodicumarinum
- C. Vikasol
- D. Thrombin
- E. Calcium gluconate

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

- A. Chingamin
- B. Rifampicin
- C. Ampicillin
- D. Gentamicin
- E. Biseptol (Co-Trimoxazole)

32. A sample section of an axial body shows a complex consisting of phellogen and its derivatives - cork and phelloderm. This tissue is called:

- A. Periderm
- B. Colenchyma
- C. Sclerenchyma
- D. Epiblema
- E. Epidermis

33. A pharmacy dispenses glaucine hydrochloride to a patient with chronic bronchitis. The patient must be warned about the following typical side effect of the drug:

- A. Blood pressure fall
- B. Excitation of the central nervous system
- C. Arrhythmia
- D. Rise of intraocular pressure
- E. Allergic skin rash

34. A solution contains cations of zinc and aluminium. Specify the reagent that makes it possible to detect cations of zinc in this solution:

- A. Potassium hexacyanoferrate (II) solution
- B. Sodium hydroxide solution
- C. Cobalt nitrate $Co(NO_3)_2$
- D. Excess of 6M sodium hydroxide in presence of hydrogen peroxide
- E. Sulfuric acid solution

35. A medicament comprises sodium bicarbonate and sodium chloride. What method is used for quantitative determination of sodium bicarbonate?

- A. Acid-base titration
- B. Precipitation titration
- C. Redox titration
- D. Complexometric titration
- E. Coulometric titration

36. Concentration of magnesium sulfate in a drug can be determined by complexometric titration. Select an indicator for fixing the end point of titration:

- A. Chromogen black
- B. Phenolphthalein
- C. Methyl orange
- D. Diphenylcarbazone
- E. -

37. Select a pair of electrodes for potentiometric pH measurement of a solution:

- A. Glass and silver chloride
- B. Calomel and silver chloride
- C. Quinhydrone and antimonial
- D. Mercury sulphate and silver chloride
- E. Glass and antimonial

38. The mass percentage of ascorbic acid can be determined by the cerimetric analysis in the presence of the following redox indicator:

- A. Ferroin
- B. Methylene red
- C. Eosin
- D. Fluorescein
- E. Methylene orange

39. 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 for?

- A. Arterial hyperemia
- B. Venous hyperemia
- C. Thrombosis
- D. Embolism
- E. Ischemia

40. Microscopic examination of a perennial stem revealed the secondary integumentary tissue that was formed as a result of cell division of:

- A. Phellogen
- B. Procambium
- C. Cambium
- D. Pericycle
- E. Protoderma

41. What synthetic drug of the hydrazide group is typically prescribed for pulmonary tuberculosis?

- A. Isoniazid
- B. Rifampicin
- C. Acyclovir
- D. Metronidazole
- E. Doxycycline hydrochloride

42. A female student with a cold has been prescribed an antipyretic medication. Specify this drug:

- A. Paracetamol
- B. Ascorbic acid
- C. Oxytocin
- D. Famotidine
- E. Cyanocobalamin

43. Specify the drug that constricts pupils and reduces intraocular pressure:

- A. Pilocarpine hydrochloride
- B. Fenofibrate
- C. Nitrazepamum
- D. Atropine sulfate
- E. Dithylinum

44. A plant under study has stipules fused together and thus forming a tight tube - ochrea, that is a diagnostic feature of the following family:

- A. *Polygonaceae*
- B. *Gramineae*
- C. *Rosaceae*
- D. *Papaveraceae*
- E. *Clusiaceae*

45. A 42-year-old female has foamy-purulent vaginal discharges. The smear stained by Romanovsky-Giemsa's method

has been found to include flagellated bacteria. What is the most likely microorganism that has been found by the doctor?

- A. *Trichomonas vaginalis*
- B. *Leishmania donovani*
- C. *Trypanosoma gambiense*
- D. *Trichomonas hominis*
- E. *Lamblia intestinalis*

46. A patient has been taking diclofenac sodium for a long time. The family physician withdrew this drug and administered celecoxib. What disease was the reason for the drug substitution?

- A. Peptic ulcer
- B. Bronchial asthma
- C. Urolithiasis
- D. Arterial hypertension
- E. Chronic hepatitis

47. The rate of a chemical reaction **DOES NOT DEPEND** on the concentration of the reactants. Specify the order of such reaction:

- A. Zeroth
- B. First
- C. Second
- D. Third
- E. Fraction

48. A patient has been diagnosed with bronchial asthma. Specify a medicament that can be administered for asphyxiation:

- A. Salbutamol
- B. Diclofenac sodium
- C. Paracetamol
- D. Anapriline
- E. Acetylcysteine

49. Sulfanilamides inhibit the growth and development of bacteria. The mechanism of their action is based on the impairment of the following acid synthesis:

- A. Folic
- B. Lipoic
- C. Nicotinic
- D. Pantothenic
- E. Pangamic

50. Sulfanilamides are widely used as bacteriostatic agents. The mechanism of antimicrobial action of sulfanilamides is based on their structural similarity to:

- A. Para-aminobenzoic acid
- B. Glutamic acid
- C. Folic acid
- D. Nucleic acid
- E. Antibiotics

51. Specify the standard solution for the iodometric determination of reducing agents (direct titration):

- A. I_2
- B. $KMnO_4$
- C. $Na_2S_2O_3$
- D. $K_2Cr_2O_7$
- E. KI

52. The fourth group of cations includes the cations Al^{3+} , Sn^{2+} , $Sn(IV)$, $As(V)$, $As(III)$, Zn^{2+} , C^{3+} . The group reagent for the fourth group of cations is the solution of:

- A. $NaOH$, H_2O_2
- B. HCl
- C. NH_3 , H_2O_2
- D. $H_2C_2O_4$
- E. H_2SO_4 , H_2O_2

53. In a qualitative analysis, when an excess of the group reagent (NH_3 solution) reacts with the cations of the sixth analytical group (Cu^{2+} , Co^{2+} , Ni^{2+} , Cd^{2+} , Hg^{2+}), the following compounds are formed:

- A. Metal ammine complexes
- B. Metal hydroxides
- C. Basic metal salts
- D. Aqua complexes of metals
- E. Hydroxocomplexes of metals

54. Sodium fluoride is one of the components of the drugs used in the treatment of dental caries. NaF reacts with the following compound:

- A. H_2SO_4
- B. CO_2
- C. $NaCl$
- D. KI
- E. CH_3COOH

55. The most common technology in pharmaceutical production is maintaining constant temperature and pressure. What is this process called?

- A. Isobaric-isothermal
- B. Isochoric-isothermal
- C. Isobaric
- D. Isochoric
- E. Isothermal

56. Some medications are colloidal solutions. What size of the colloidal particles is typical for the colloidal dispersion?

- A. $10^{-7} - 10^{-9}$ M
- B. $10^{-5} - 10^{-7}$ M
- C. $10^{-10} - 10^{-11}$ M
- D. $10^{-5} - 10^{-3}$ M
- E. $> 10^{-3}$ M

57. To maintain a certain level of pH -medium, the buffer solutions are used. Specify a composition of substances that **DOES NOT EXHIBIT** buffer properties:

- A. $NaOH + NaCl$
- B. $CH_3COOH + CH_3COONa$
- C. $NH_4Cl + NH_3 \cdot H_2O$
- D. $HCOOH + HCOONa$
- E. $NaH_2PO_4 + Na_2HPO_4$

58. What non-narcotic centrally-acting antitussive drug can be used for dry cough?

- A. Glaucine
- B. Codeine
- C. Acetylcysteine
- D. Ambroxol
- E. Mucaltinum

59. What analytical effect is observed after fixing the endpoint during the titration by Mohr method?

- A. Brick-red precipitate
- B. Red colour of solution
- C. Yellow colour of solution
- D. White precipitate
- E. Yellow precipitate

60. What solution can be determined by photolorimetric method by self-absorbance?

- A. Potassium chromate
- B. Potassium chloride
- C. Potassium sulphate
- D. Potassium nitrate
- E. Potassium phosphate

61. What substance in a solution can be determined in two ways - by the polarimetric or refractometric method?

- A. Ascorbic acid
- B. Sodium benzoate
- C. Benzoic acid
- D. Calcium gluconate
- E. Magnesium sulfate

62. A patient with symptoms of chronic bronchitis has been administered acetylcysteine. What is the mechanism of

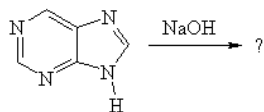
its expectorant action?

- A. Depolymerization of sputum mucopolysaccharides
- B. Stimulation of adrenergic receptors
- C. Inhibition of cough center
- D. Stimulation of respiratory center
- E. Anesthesia of respiratory mucosa

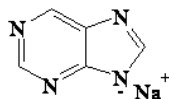
63. During the gastric secretion, proteolytic enzymes are secreted in form of zymogens. What enzyme is activated by hydrochloric acid?

- A. Pepsin
- B. Trypsin
- C. Amylase
- D. Lipase
- E. Chymotrypsin

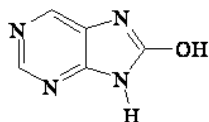
64. Specify the reaction product of purine reacting with sodium hydroxide:



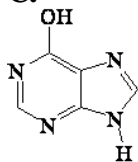
A.



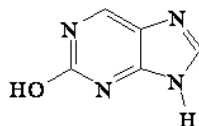
B.



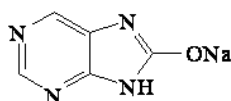
C.



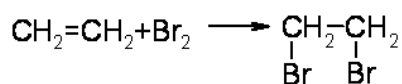
D.



E.



65. What class of reactions does this reaction relate to?



- A. Addition
- B. Substitution
- C. Reduction
- D. Oxidation
- E. Rearrangement

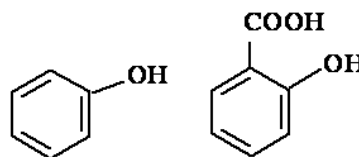
66. The combined use of furosemide with aminoglycoside antibiotics causes:

- A. Hearing impairment
- B. Increased blood pressure
- C. Cramps
- D. Hyperhidrosis
- E. Increased intraocular pressure

67. A child exhibits physical and mental retardation. Urine analysis revealed high concentration of orotic acid. This disease can be addressed by the constant use of:

- A. Uridine
- B. Adenine
- C. Guanine
- D. Glutamine
- E. Alanine

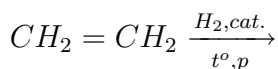
68. To distinguish between phenol and salicylic acid, the following reagent is used:



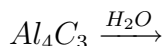
- A. Sodium bicarbonate solution
- B. Iron (III) chloride solution
- C. Sodium hydroxide solution
- D. Sodium chloride solution
- E. Bromine solution

69. Ethane is the product of the following reaction:

A.



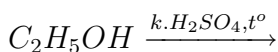
B.



C.



D.



E. -

70. What titrants are used for the titration in the non-aqueous medium?

- A. Perchloric acid and sodium ethylate
- B. Sulfuric acid and barium hydroxide
- C. Hydrochloric acid and potassium ethylate
- D. Nitric acid and sodium hydroxide
- E. Perchloric acid and barium hydroxide

71. There are areas where humans or animals are exposed to the constant risk of contracting certain types of bacteria. What feature of these bacteria is responsible for their long viability in the soil?

- A. Spore formation
- B. Capsule formation
- C. Ability to multiply in the plant remains
- D. Thick cell wall
- E. Plasmids

72. What reagents are used to separate the cations of the IV analytical group from the cations of the V and VI analytical groups in the analysis of their composition?

- A. $NaOH$ and H_2O_2
- B. H_2SO_4
- C. *Dithizone*
- D. NH_4OH
- E. Na_2S

73. Specify the standard substance for the standardization of 0,1 M of hydrochloric acid solution:

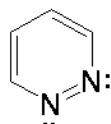
- A. Sodium carbonate
- B. Ammonium hydroxide
- C. Oxalic acid
- D. Sodium chloride
- E. Zinc sulphate

74. A patient with a diagnosis of drug poisoning has been admitted to the 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. Inhibition of the respiratory center function
- B. Impaired function of spinal cord motoneurons
- C. Impaired function of the neuromuscular system
- D. Diminished chest mobility
- E. Pulmonary dysfunction

75. Specify the number of electrons involved into formation of the isolated conjugated system in the pyrimidine molecule:



- A. 6
- B. 4
- C. 10
- D. 2
- E. 8

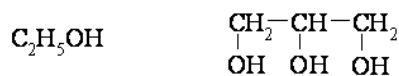
76. In course of long-term treatment of an infectious patient with penicillin, the pathogen transformed into the L-form. What changes occur in the pathogen cell in case of L-transformation?

- A. Absence of a cell wall
- B. Absence of flagella
- C. Absence of a capsule
- D. Absence of a spore
- E. Absence of inclusions

77. Dosage forms produced as coarse dispersion systems with the liquid dispersion medium and the solid phase are called:

- A. Suspension
- B. Emulsion
- C. Aerosol
- D. Powder
- E. Foam

78. Ethanol can be distinguished from glycerol by the reaction with the following reagent:



- A. $Cu(OH)_2$
- B. HBr
- C. $FeCl_3$
- D. $KMnO_4$
- E. Ag_2O

79. 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. Urea
- C. Hemoglobin
- D. Insulin
- E. Adrenaline

80. 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. Exudation
- B. Alteration
- C. Proliferation
- D. Regeneration
- E. Sclerosis

81. Quite often, the soil may contain a number of pathogenic microorganisms. The causative agents of the following disease may stay viable in the soil for a long time:

- A. Anthrax
- B. Diphtheria
- C. Viral hepatitis
- D. Pertussis
- E. Dysentery

82. As a result of an accident (snakebite) a male patient has the following blood values: Hb- 80 g/l, RBC- $3,0 \cdot 10^{12}/l$; WBC- $5,5 \cdot 10^9/l$. What type of anemia is observed in this case?

- A. Hemolytic
- B. Folic acid-deficiency
- C. Posthemorrhagic
- D. Aplastic
- E. Iron-deficiency

83. Emulsions of 0,1 - 74% dispersed-phase volume relate to:

- A. Concentrated
- B. Diluted
- C. Highly concentrated
- D. W/O type
- E. O/W type

84. Bacteriological inspection of disinfection quality at a pharmacy revealed a microorganism in an utility room (in the sink). The microorganism has the following properties: mobile nonspore-forming gram-negative bacteria that form capsular substance, grow well on ordinary nutrient media, secrete the blue-green pigment. This microorganism is most likely to be of the following genus:

- A. *Pseudomonas*
- B. *Proteus*
- C. *Clostridium*
- D. *Shigella*
- E. *Vibrio*

85. Microbiological analysis of medicinal raw materials revealed capsular bacteria. What stain method was used to detect the capsules?

- A. Gin's
- B. Ziehl-Neelsen's
- C. Neisser's
- D. Gram's
- E. Ozheshko's

86. At pH value 5,0 and isoelectric point 4,0, the protein will migrate toward the following electrode during electrophoresis:

- A. Anode
- B. Cathode
- C. Calomel
- D. Silver chloride
- E. Platinum

87. The intracellular metabolism of glycerol starts with its activation. What compound is formed as a result of the first reaction of its conversion?

- A. Alpha-glycerolophosphate
- B. Pyruvate
- C. Lactate
- D. Choline
- E. Acetyl coenzyme A

88. A 40-year-old patient has a history of bronchial asthma and bradyarrhythmia. In order to eliminate bronchospasm, the drugs of the following pharmacological group should be administered:

- A. *M*-anticholinergics
- B. β -adrenergic blocking agents
- C. *M*-cholinergic agents
- D. Anticholinesterase agents
- E. Muscle relaxants

89. Which representative of the *Rosaceae* family has spring bloom in form of white, fragrant flowers gathered in pendulous racemes at the ends of short shoots?

- A. *Padus rasemosa* (*Pavia*)
- B. *Potentilla erecta*
- C. *Sorbus aucuparia*
- D. *Cerasus vulgaris*
- E. *Crataegus sanquinea*

90. A patient had been diagnosed with right lung cancer and administered surgical treatment. After right-sided pneumonectomy the patient developed evident dyspnea. What form of respiratory failure developed in this patient?

- A. Pulmonary restrictive
- B. Central
- C. Peripheral
- D. Pulmonary obstructive
- E. Thoracodiaphragmal

91. A 22-year-old male was stung by bees, the affected region became hyperemic and edematous. What is the leading mechanism of edema development in this patient?

- A. Increased permeability of the capillaries
- B. Decreased hydrostatic blood pressure in the capillaries
- C. Increased oncotic pressure of tissue fluid
- D. Impaired lymphatic efflux
- E. Reduced oncotic pressure of blood

92. A patient has obstruction of the common bile duct. Which of these substances is usually found in urine in such cases?

- A. Bilirubin
- B. Ketone bodies
- C. Uric acid
- D. Creatinine
- E. Glucose

93. A ground for separating lead (II) chloride from the other chlorides of the II analytical group (acid-base classification) is its different solubility in:

- A. Hot water
- B. Hydrochloric acid
- C. Alkalis
- D. Ammonia solution
- E. Sulfuric acid

94. A student analyzes an axial plant organ characterized by radial symmetry, unlimited growth, positive geotropism. It provides nutrition, vegetative propagation, anchorage of plant in the soil. This organ should be identified as:

- A. Root
- B. Stem
- C. Leaf
- D. Rhizome
- E. Seed

95. Cross section of a root conducting zone shows pericycle that gives rise to:

- A. Lateral roots
- B. Trichomes
- C. Adventitious roots
- D. Root fibrilla
- E. Root cap

96. Select a name that corresponds with the formula: $CH_3 - C \equiv N$:

- A. Acetic acid nitrile
- B. Acetamide
- C. Acetic anhydride
- D. Acetoxime
- E. Ethyl isocyanide

97. What data is required to measure the activation energy?

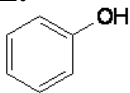
- A. Constants of reaction rate at two temperatures
- B. Thermal energy of the reaction
- C. Energy change of the system
- D. Internal energy of the system
- E. Reaction order

98. A patient with chronic renal failure exhibits azotemia, hypo- and isosthenuria. What is the main factor in the pathogenesis of these symptoms in the patient?

- A. Reduction of existing nephrons mass
- B. Increase in glomerular filtration rate
- C. Reduction of tubular secretion
- D. Disturbance of the permeability of the glomerular membrane
- E. Decrease in glomerular filtration rate in each nephron

99. Which of the given compounds **WILL NOT** decolorize the bromine water?

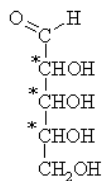
- A. $CH_3 - CH_3$
 B. $CH_2 = CH_2$
 C. $CH \equiv CH$
 D. $CH_3 - CH = CH_2$
 E.



100. Chemically, ethers are quite inert compounds. Ethers decompose even at a room temperature under the effect of the following haloid acid:

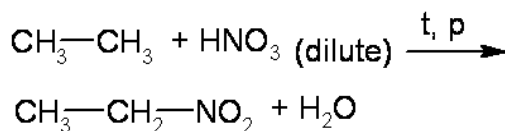
- A. HI
 B. HBr
 C. HCl
 D. HF
 E. $HClO$

101. Specify the number of existing stereoisomeric aldopentoses:



- A. 8
 B. 2
 C. 4
 D. 6
 E. 16

102. This scheme of nitroalkane synthesis is called the reaction of:

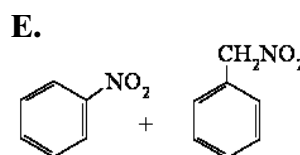
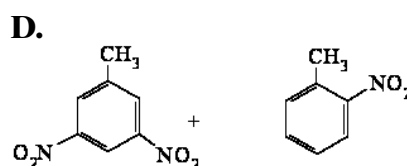
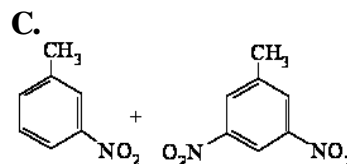
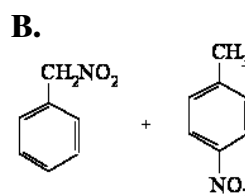
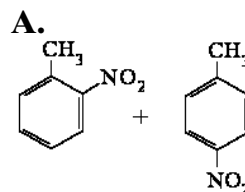
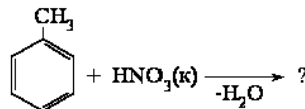


- A. Kononov
 B. Zinin
 C. Kucherov
 D. Tishchenko
 E. Chichibabin

103. A hospital admitted a patient with arterial hypertension induced by renal artery stenosis. The patient complains of persistent nausea and headache. The main element in the pathogenesis of hypertension is the activation of the following system:

- A. Renin-angiotensin
 B. Hypothalamic-pituitary
 C. Kallikrein-kinin
 D. Sympathoadrenal
 E. Parasympathetic

104. The products of the toluene nitration are mainly:



105. Halogen atoms in an organic compound can be detected by means of:

- A. Beilstein test
 B. Molisch's test
 C. Bayer's test
 D. Lucas' test
 E. Iodoform test

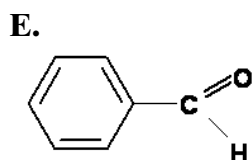
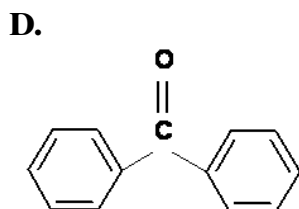
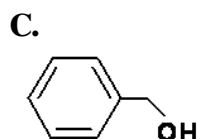
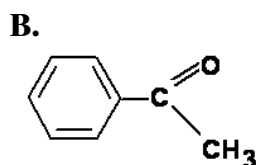
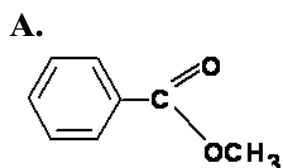
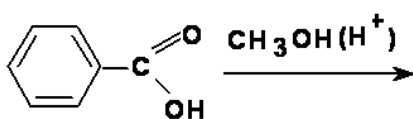
106. Before a surgical operation, a surgeon treated his hands with an alcohol-containing solution. Which group of drugs does this solution relate to?

- A. Antiseptics
- B. Disinfectants
- C. Sterilizing solutions
- D. Detergents
- E. Surface-active substances

107. Aniline can be converted into the water-soluble salt through the treatment with a solution of:

- A. Hydrochloric acid
- B. Sodium hydroxide
- C. Sodium sulfate
- D. Ethanol
- E. Dimethylamine

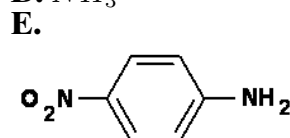
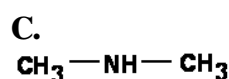
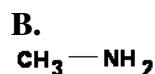
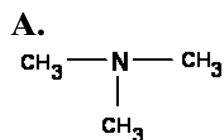
108. Select the correct product of the reaction:



109. Select the formula for pentene-2 from the list:

- A. $CH_3 - CH_2 - CH = CH - CH_3$
- B. $CH_3 - CH_2 - CH_2 - CH_2 - CH_3$
- C. $CH_3 - CH_2 - CH_2 - CH = CH_2$
- D. $CH_3 - CH_2 - CH_2 - CH_3$
- E. $CH_3 - CH = CH - CH_3$

110. Specify a compound having the most pronounced basic properties in the gas phase:



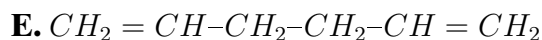
111. Specify the correct name for the product of the acetaldehyde reacting with hydrazine:



- A. Acetaldehyde hydrazone
- B. Acetaldehyde oxime
- C. Acetaldimine
- D. Acetaldehyde phenylhydrazone
- E. Acetaldehyde semicarbazone

112. Select a conjugated diene from the list of diene hydrocarbons:

- A. $CH_2 = CH - CH = CH_2$
- B. $CH_2 = C = CH - CH_3$
- C. $CH_2 = CH - CH_2 - CH = CH_2$
- D.



113. Under the given conditions, the unsaturated organic compounds are reduced with the following reagent:

- A. H_2, Ni, t
- B. HNO_3, p, t
- C. $NaOH, H_2O$
- D. $K_2Cr_2O_7, H^+$
- E. H_2O, Hg^{2+}, H^+

114. Which of the following compounds relates to the conjugated dienes?

- A. $CH_3-CH_2-CH=CH-CH=CH_2$
- B. $CH_2=C=CH-CH_2-CH_2-CH_3$
- C. $CH_2=CH-CH_2-CH_2-CH=CH_2$
- D. $CH_3-CH=C=CH-CH_2-CH_3$
- E.
$$\begin{array}{c} CH_3-C-CH_2-CH=CH_2 \\ || \\ CH_2 \end{array}$$

115. Which of the following solutions with the same molar concentration has the maximum osmotic pressure?

- A. Aluminium nitrate
- B. Glucose
- C. Sodium chloride
- D. Magnesium sulfate
- E. Potassium iodide

116. What class of organic compounds is characterized by the presence of $C \equiv N$ group?

- A. Nitriles
- B. Amines
- C. Nitro compounds
- D. Alcohols
- E. Aldehydes

117. If the amount of a high-molecular substance added to the sol is very small, it may not increase but decrease its stability. This phenomenon is called:

- A. Sensibilization
- B. Solubilization
- C. Mutual coagulation
- D. Colloidal protection
- E. Sol habituation

118. Which medicinal plant of the *Asteraceae* family has only disk flowers in the flowerhead?

- A. Three-part beggarticks (*Bidens tripartita*)
- B. Dandelion (*Taraxacum officinale*)
- C. Echinacea purpurea
- D. Cornflower (*Centaurea cyanus*)
- E. Common yarrow (*Achillea millefolium*)

119. Spore and pollen analysis revealed in the pollen some tetrahedral spores with a semi-circular base and a reticular surface,

which may belong to:

- A. *Lycopodiophyta*
- B. *Equisetiphyta*
- C. *Bryophyta*
- D. *Polypodiophyta*
- E. *Pinophyta*

120. Many species of wild rose are a source of vitamins, fatty oils and herbal material. Specify the juicy pseudocarps that are procured as herbal raw material:

- A. Rose hips
- B. Coenobia
- C. Hesperides
- D. Aggregate-accessory fruits
- E. Cenocarp stone-fruits

121. Comparison of the underground organs of herbaceous plants revealed that in the bipartite annuals the following organ prevails:

- A. Main root system
- B. Adventitious root system
- C. Rhizome
- D. Bulb
- E. Corm

122. Growth of some cancer cells is caused by a certain growth factor. Treatment of leukemia involves applying an enzyme that destroys this essential factor. Specify this enzyme:

- A. Asparaginase
- B. Glutaminase
- C. Succinate dehydrogenase
- D. Citrate synthase
- E. Aspartate aminotransferase

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

- A. Dihydrofolate reductase
- B. Xanthine oxidase
- C. Hexokinase
- D. Creatine kinase
- E. Lactate dehydrogenase

124. A sample of a finished dosage form was found to be contaminated with some microorganisms exhibiting the following properties: greenish fluorescent colonies of gram-negative nonsporeforming bacilli that grew on the medium for the detection of pyocyanin. The bacilli release the blue-green pigment into the medium. What microorganisms contaminated the finished

dosage form?

- A. *Pseudomonas aeruginosa*
- B. *Enterobacteriaceae*
- C. *Staphylococcus aureus*
- D. *Staphylococcus epidermidis*
- E. *Staphylococcus saprophyticus*

125. Vaccines are the artificial or natural preparations produced from bacteria, viruses and other microorganisms, their chemical components and waste products. They are used for the active immunization of humans and animals for the prevention and treatment of infectious diseases. The attenuated vaccines consist of:

- A. Viable microbes
- B. Dead microbes
- C. Anatoxin
- D. Dead microbes and toxoid
- E. Immunoglobulins

126. What method of sterilization should be used during the manufacturing liquid dosage forms containing proteins?

- A. Filtering
- B. Boiling
- C. Gas sterilization
- D. Autoclaving
- E. Pasteurization

127. Blood pressure is regulated by a number of biologically active compounds. What peptides that enter the bloodstream can affect the vascular tone?

- A. Kinins
- B. Leukotrienes
- C. Enkephalins
- D. Iodothyronines
- E. Endorphins

128. Addison's (bronze) disease is treated with glucocorticoids. Their effect is provided by the potentiation of the following process:

- A. Gluconeogenesis
- B. Glycolysis
- C. Pentose phosphate cycle
- D. Glycogenolysis
- E. Ornithine cycle

129. Representatives of *Asteraceae* family have various types of flowers **EXCEPT FOR:**

- A. Bilabiate
- B. Tubular
- C. Funnelform
- D. Ligulate
- E. Pseudoligulate

130. *Datura stramonium* has dry many-seeded fruits formed by syncarpous gynoeceum that dehisce when the valves are broken off. Specify the fruit type:

- A. Capsule
- B. Follicle
- C. Siliqua
- D. Coenobium
- E. Hesperidium

131. A sample of water used in drug production has been sent to a laboratory for sanitary and virological analysis. Presence of what virus group will be indicative of faecal contamination of water and thus the need for its additional purification?

- A. Picornaviridae
- B. Herpesviridae
- C. Orthomyxoviridae
- D. Retroviridae
- E. Flaviviridae

132. Specify the order of the reaction, for which $K=1/t (1/c - 1/c_0)$:

- A. Second
- B. Third
- C. First
- D. Zeroth
- E. Fractional

133. After an insulin injection a 45-year-old female with a long history of diabetes mellitus has developed weakness, paleness, palpitation, anxiety, double vision, numbness of lips and the tip of tongue. Blood glucose is at the rate of 2,5 mmol/l. What complication has developed in the patient?

- A. Hypoglycemic coma
- B. Hyperosmolar coma
- C. Hyperglycemic coma
- D. Hyperketonemic coma
- E. Uremic coma

134. A 45-year-old male patient was diagnosed with stomach ulcer. After the conservative treatment the pain and heartburn disappeared, the function of the gastrointestinal tract was normalized. Endoscopic examination of stomach revealed cicatrization of the ulcer. Qualify this course of the disease:

- A. Remission
- B. Relapse
- C. Latent period
- D. Recovery
- E. Prodromal stage

135. 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. Iron-deficiency
- C. Acquired hemolytic
- D. Hereditary hemolytic
- E. Chronic posthemorrhagic

136. Morphological analysis of poplar inflorescence showed that it is a simple monopodial inflorescence: main axis is drooping, the flowers are sessile, unisexual. Specify the type of inflorescence:

- A. Catkin
- B. Head
- C. Capitulum
- D. Cyme
- E. Panicle

137. During the morphologic analysis of various plant leaves the students found the leaves, whose length of the leaf blade is 5 times more than its width. Specify the shape of the leaf blade:

- A. Linear
- B. Elliptical
- C. Lanceolate
- D. Ovoid
- E. Reniform

138. Food rich in carbohydrates at first increases the blood sugar and then decreases its rate due to the insulin action. What process is activated by this hormone?

- A. Synthesis of glycogen
- B. Gluconeogenesis
- C. Breakdown of glycogen
- D. Breakdown of proteins
- E. Breakdown of lipids

139. After drinking milk a 1-year-old child developed diarrhea, flatulence. The baby is likely to have the deficiency of the following enzyme:

- A. Lactase
- B. Maltase
- C. Aldolase
- D. Hexokinase
- E. Glycosidase

140. A patient has developed megaloblastic anemia on a background of alcoholic cirrhosis. The main cause of anemia in this patient is the following vitamin deficiency:

- A. Folic acid
- B. Lipoic acid
- C. Biotin
- D. Thiamin
- E. Pantothenic acid

141. The fruit of black locust is dry, formed of a single carpel, dehisces by the ventral and dorsal sutures on two sides, the seeds are attached along the ventral suture. Such fruit is called:

- A. Legume
- B. Siliqua
- C. Follicle
- D. Capsule
- E. Silicula

142. At a chemical analytical laboratory, a technician examines a solution of the VI analytical group cations. After the addition of ammonium thiocyanate and amyl alcohol, the organic layer turned blue. What cation is present in the solution?

- A. Co^{2+}
- B. Ni^{2+}
- C. Cu^{2+}
- D. Hg^{2+}
- E. Cd^{2+}

143. Microscopic study of soybean seeds stained with Sudan III revealed some droplets of various sizes. They are:

- A. Lipids
- B. Proteins
- C. Starch
- D. Inulin
- E. Glycogen

144. An analytical chemist determines sodium cations by ion-exchange chromatography. In order to prepare the cation-exchange resin in the H^+ form, the analyst uses:

- A. HCl
- B. CH_3COOH
- C. C_2H_5OH
- D. H_3PO_4
- E. CH_3OH

145. When studying the diagnostic features of *Origanum vulgare*, the students noticed that the plant had a compound monopodial inflorescence. It is called:

- A. Corymbose panicle
- B. Cluster of heads
- C. Cincinnus
- D. Bostyx
- E. Head

146. While preparing a solution, a pharmaceutical analyst converted a freshly formed precipitate into a sol by treating it with an electrolyte solution. What method of obtaining disperse systems was used by the analyst?

- A. Peptization
- B. Physical condensation
- C. Chemical condensation
- D. Solvent exchange method
- E. Condensation from steam

147. Sol of iron (III) hydroxide is positively charged. Specify the ion which has the lowest coagulation threshold:

- A. SO_4^{2-}
- B. Cl^-
- C. Ca^{2+}
- D. Na^+
- E. J^-

148. The method of treating people with serious diseases and intoxications is based on the absorption of toxic substances from the blood. What is this method called?

- A. Hemosorption
- B. Electrophoresis
- C. Hemadsorption
- D. Dialysis
- E. Ultrafiltration

149. It is known that malonyl CoA is formed from acetyl CoA and carbon dioxide under the influence of acetyl CoA carboxylase. What vitamin is a coenzyme of this enzyme?

- A. Biotin
- B. Folic acid
- C. Pantothenic acid
- D. Ascorbate
- E. Thiamine

150. Specify the standard solutions that are used in permanganatometry to quantify the oxidants by the residual titration method:

- A. Potassium permanganate, iron (II) sulfate
- B. Potassium dichromate, sodium thiosulfate
- C. Potassium bromate, sodium thiosulfate
- D. Potassium iodate, sodium thiosulfate
- E. Cerium (IV) sulfate, iron (II) sulfate

151. What indicator is used for fixing the endpoint of mercurimetric titration?

- A. Thiocyanate complexes of iron (III)
- B. Fluorescein
- C. Eosin
- D. Murexide
- E. Potassium chromate

152. Vitamin B_1 deficiency has a negative effect on a number of processes. This is caused by the dysfunction of the following enzyme:

- A. Pyruvate dehydrogenase complex
- B. Aminotransferase
- C. Succinate dehydrogenase
- D. Glutamate
- E. Lactate dehydrogenase

153. A patient with tuberculosis has been prescribed some anti-TB preparations. Which of the following chemotherapeutic drugs has an effect on the tuberculosis pathogen?

- A. Ftivazide
- B. Furacilinum
- C. Methisazonum
- D. Sulfadimezinum
- E. Phtalazolum

154. Many diseases of medicinal plants are caused by bacteria of the *Pseudomonas* genus. Select the bacteria relating to this genus:

- A. Blue pus bacillus
- B. Colon bacillus
- C. Proteus
- D. Mycoplasma
- E. Micrococci

155. 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. Yolk-salt agar
- B. Blood agar
- C. Bismuth sulfite agar
- D. Sugar agar
- E. Meat-extract agar

156. Colloid silver preparations Protargolum and Collargolum are widely used in medical practice as bactericidal drugs. In addition to the active ingredients, these drugs contain protein compounds. What is the function of proteins in these preparations?

- A. Prevention of coagulation of the colloidal solution
- B. Prolongation of shelf-life
- C. Reduction of the side effects
- D. Improvement of the drug technology
- E. Potentiation of the bactericidal action of silver

157. Therapeutic preparations for topical use (transdermal, vaginal, etc.) do not require sterility. However, the total permissible number of microbial cells and fungi in 1 g (ml) of a drug should not exceed:

- A. 100
- B. 10
- C. 500
- D. 1000
- E. 10 0000

158. P.Ehrlich is considered to be the founder of modern chemotherapy. What chemotherapy drug was developed by this scientist?

- A. Salvarsan
- B. Solusurminum
- C. Calomel
- D. Novarsenolum
- E. Osarsolum

159. 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. 4,5 mmol/l
- E. 5,5 mmol/l

160. A patient who had been continuously treated with glucocorticoids was found to have a duodenal ulcer. What mechanism plays a major part in its development?

- A. Increase of gastric juice secretion and acidity
- B. Acceleration of histamine inactivation in the stomach
- C. Inhibition of gastrin secretion in the stomach
- D. Excess production of prostaglandin E
- E. Hyperglycemia

161. To isolate the lead (II) chloride from the other cations of the II analytical group in the systematic analysis, the chloride precipitate should be processed with:

- A. Hot water
- B. Ammonia solution
- C. Nitric acid solution
- D. Acetate acid solution
- E. Alkali solution

162. What reagent is used to separate the cations of copper (II) and mercury from the other cations of the VI analytical group?

- A. Sodium thiosulfate
- B. Sodium sulfate
- C. Bromine water
- D. Potassium sulfide
- E. Excess of the concentrated ammonia solution

163. For cultivation of Brucella, pure cultures should be incubated in CO_2 enriched atmosphere. What type of breathing is typical for Brucella?

- A. Capnophilic
- B. Facultative anaerobic
- C. Obligate anaerobic
- D. Obligate aerobic
- E. Any

164. Some success in reducing malaria transmission was achieved through the mass destruction of transmitting mosquitoes and their larvae. The measures aimed at the destruction of insects are called:

- A. Disinfestation
- B. Disinfection
- C. Deratization
- D. Sterilization
- E. Decontamination

165. On the photomicrograph of a herbaceous plant stem the bicollateral vascular bundles are clearly visible. The microspecimen represents the stem of the following plant:

- A. Pumpkin
- B. Rye
- C. Flax
- D. Corn
- E. Solomon's seal

166. What type of conducting bundles is typical for all root zones of one-seeded plants?

- A. Radical
- B. Central phloem
- C. Central xylem
- D. Bilateral
- E. Collateral

167. Antidepressants can increase the concentration of catecholamines in the synaptic cleft. What is the mechanism of action of these drugs?

- A. Inhibition of monoamine oxidase
- B. Activation of monoamine oxidase
- C. Inhibition of xanthine oxidase
- D. Activation of acetylcholinesterase
- E. Inhibition of acetylcholinesterase

168. The figwort family *Scrophulariaceae* includes a biennial plant up to 1,5 m high, with golden-yellow flowers gathered in spiked inflorescences. The flowers have five stamens. Specify this plant:

- A. *Verbascum flomoides*
- B. *Digitalis purpurea*
- C. *Digitalis grandiflora*
- D. *Digitalis lanata*
- E. *Digitalis Ferruginea*

169. Permanganometric titration of hydrogen peroxide is carried out in the following medium:

- A. Sulfate
- B. Alkaline
- C. Nitrate
- D. Hydrochloric
- E. Alcohol

170. Quantitative analysis of zinc salts is performed by method of trilonometry. What indicator is used for this purpose?

- A. Eriochrome black T
- B. Phenolphthalein
- C. Methyl black
- D. Potassium dichromate
- E. Thymol blue

171. In response to the administration of protein drugs, a patient developed an allergic reaction. The development of the allergic reaction is caused by the increased synthesis of the following compound:

- A. Histamine
- B. Choline
- C. Adrenaline
- D. Histidine
- E. Serotonin

172. *Astragalus dasyanthus* has sessile flowers gathered into inflorescences with a short thick axis. This kind of inflorescence

is called:

- A. Capitulum
- B. Cyme
- C. Raceme
- D. Head
- E. Calathidium

173. 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. Cu^{2+}
- C. NO_3^-
- D. H^+
- E. OH^-

174. A patient with acute myocarditis exhibits rapid fatigability, shortness of breath, edemata of legs, hepatomegaly. Classify the type of heart failure by the mechanism of its development:

- A. Myocardial
- B. Overload
- C. Compensated
- D. Subcompensated
- E. Combined

175. A child with PKU has an unpleasant mouse-like odor, growth retardation, mental retardation. These symptoms are associated with the high concentration of the following substance in blood:

- A. Phenylpyruvic acid
- B. Glucose
- C. Cholesterol
- D. Adrenaline
- E. Uric acid

176. After a contact with a person having an infectious diseases, the disease pathogens entered the patient's body and started to multiply, but the symptoms of the disease were not yet observable. What period of the disease is this typical for?

- A. Latent
- B. Prodromal
- C. Manifest illness stage
- D. Clinical outcome
- E. Relapse

177. Extraction is commonly used in pharmacy for separating mixtures, increasing the concentration of any solute and extracting lipophilic compounds from the herbal material. This process is based

on:

- A. Nernst distribution law
- B. Konovalov's first law
- C. Dalton's second law
- D. Third law of thermodynamics
- E. Hess's Law

178. The rate of extraction of a drug substance depends on the value of its distribution coefficient. If the distributed substance is characterized by different rates of dissociation or association in different phases, the distribution coefficient is calculated by:

- A. Shilov-Lepin equation
- B. Nernst distribution law
- C. Gibbs' phase rule
- D. The first Raoult's law
- E. Van't Hoff rule

179. A male patient developed fever up to 40°C , there are vomiting, diarrhea, the patient is in grave condition. Blood osmolality is 270 mOsm/l. What disorder of water-salt metabolism is observed in the patient?

- A. Hypoosmolar hypohydration
- B. Isoosmolar hypohydration
- C. Hyperosmolar hypohydration
- D. Isoosmolar hyperhydration
- E. Hypoosmolar hyperhydration

180. A 40-year-old male presented to the endocrinology department with disproportionate enlargement of limbs, mandible and nose. These manifestations are caused by the overproduction of the following hormone:

- A. Somatostatin
- B. Corticotropin
- C. Aldosterone
- D. Adrenaline
- E. Vasopressin

181. Surfactants are commonly used in pharmaceutical production. What kind of surfactant is potassium oleate?

- A. Anionic
- B. Cationic
- C. Nonionic
- D. Amphoteric
- E. None of the above

182. Diabetes and starvation cause the excess production of ketone bodies that are used as an energy source. They are produced from the following compound:

- A. Acetyl-CoA
- B. Isocitrate
- C. Lactate
- D. Malate
- E. Ketoglutarate

183. Allantoic fluid of a chicken embryo contaminated with nasopharyngeal flush of a patient was found to contain a virus. What diagnostic agents should be used to identify it?

- A. Standard antiviral sera
- B. Viral diagnosticums
- C. Serum preparations
- D. Diagnosticums produced of standard virus strains
- E. Polyvalent immune diagnostic sera

184. A patient complains of severe abdominal pain, cramps, blurred vision. His relatives exhibit the same symptoms. The urine is of red colour. The patient has been hospitalized for acute intermittent porphyria. This disease might have been caused by the impaired synthesis of the following compound:

- A. Heme
- B. Insulin
- C. Bile acids
- D. Prostaglandins
- E. Collagen

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

- A. Nitrophytes
- B. Nitrophobes
- C. Calciphiles
- D. Calciphobes
- E. Halophytes

186. A 40-year-old female farmworker has been diagnosed with brucellosis and administered causal chemotherapy. What group of drugs will be used for this purpose?

- A. Antibiotic
- B. Donor immunoglobulin
- C. Inactivated therapeutic vaccine
- D. Polyvalent bacteriophage
- E. Antitoxic serum

187. A male received a radiation dose of 30 Gy. He presents with necrotic angina, disorders of the gastrointestinal tract. Blood tests revealed anemia, leukopenia and thrombocytopenia. What phase of acute radiation syndrome is observed in

the patient?

- A. Manifest illness stage
- B. Primary reactions
- C. Latent
- D. Outcome of disease
- E. -

188. As a result of hypothermia a male patient developed acute diffuse glomerulonephritis. What type of allergic reaction caused damage to the glomerular capillaries in the patient?

- A. Immunocomplex
- B. Anaphylactic
- C. Cytotoxic
- D. Cell-mediated
- E. Stimulating

189. A patient with hyperproduction of thyroid hormones has been prescribed Merkazolilum. This drug inhibits the following enzyme of iodothyronine synthesis:

- A. Iodide peroxidase
- B. Aromatase
- C. Reductase
- D. Decarboxylase
- E. Aminotransferase

190. A patient with Parkinson's disease exhibits low level of dopamine which is produced from dihydroxyphenylalanine (DOPA). What enzyme catalyzes this conversion?

- A. Decarboxylase
- B. Deaminase
- C. Hydrolase
- D. Aminotransferase
- E. Carboxypeptidase

191. As a result of an emergency situation (shipwreck) a man had to drink sea (salty) water. What form of water-salt imbalance may occur in this case?

- A. Hyperosmolar hyperhydration
- B. Hypoosmolar hyperhydration
- C. Hypotonic hyperhydration
- D. Isoosmolar hyperhydration
- E. Isotonic hyperhydration

192. Hemoglobin catabolism results in release of iron which is transported to the bone marrow by a certain transfer protein and used again for the synthesis of hemoglobin. Specify this transfer protein:

- A. Transferrin (siderophilin)
- B. Transcobalamin
- C. Haptoglobin
- D. Ceruloplasmin
- E. Albumin

193. 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. Antitoxic serum
- B. Normal serum
- C. Antibacterial serum
- D. Diagnosticum
- E. Allergen

194. 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. Artificial active
- B. Innate congenital
- C. Artificial passive
- D. Natural active
- E. Natural passive

195. Suspension is a form of pharmaceuticals used in medical practice. Which pair of substances is able to form a suspension?

- A. Water-clay
- B. Water-oil
- C. Water-ethanol
- D. Ethanol-ethyl acetate
- E. Ethanol-diethyl ether

196. In a sample studied under a microscope the multilayer palisade (columnar) parenchyma can be clearly seen. Such structure is typical for:

- A. Leaf
- B. Root
- C. Dicotyledon stem
- D. Rhizomes of ferns
- E. Adventitious roots

197. A patient exhibits small (petechial) hemorrhages under the skin and mucous membranes, bleeding gums, tooth decay, general weakness, edemata of the lower extremities. What vitamin deficiency can be suspected?

- A. *C*
- B. *B*₁
- C. *A*
- D. *D*
- E. *E*

198. A parturient woman diagnosed with uterine inertia has been delivered to the maternity ward. The doctor gave her an injection of the drug that activates the contraction of smooth muscles of the uterus. What hormone is a component of this drug?

- A. Oxytocin
- B. Gastrin
- C. Secretin
- D. Angiotensin
- E. Bradykinin

199. Soil microflora often includes

the representatives of pathogenic microorganisms. Specify the diseases, whose causative agents may stay viable in the soil for a long time:

- A. Tetanus and gas anaerobic infection
- B. Tuberculosis and mycobacterioses
- C. Colibacillosis and cholera
- D. Leptospirosis and plague
- E. Typhoid fever and dysentery

200. The one-way penetration of solvent molecules into the polymer phase resulting in complete dissolution of the polymer is called:

- A. Unlimited swelling
- B. Limited swelling
- C. Coacervation
- D. Salting-out
- E. Thixotropy