

1. An analytical pharmacist conducts an express analysis of a 2% boric acid solution. What method must be used in this case to quantify the active ingredient?

- A. Alkalimetry
- B. Argentometry
- C. Complexonometry
- D. Nitritometry
- E. Acidimetry

2. Medicines with potassium bromide are used to treat insomnia. What solution must be used to identify potassium cations in such medicines?

- A. Sodium cobaltnitrite
- B. Potassium pyroantimonate
- C. Silver nitrate
- D. Barium chloride
- E. Potassium ferrocyanide

3. An analytical pharmacist analyzes an isoniazid substance. What method must be used for quantification of this substance?

- A. Bromatometry
- B. Alkalimetry
- C. Acidimetry
- D. Argentometry
- E. Complexonometry

4. To identify phenol, an analytical pharmacist used a reaction with a solution of sodium hypochlorite in an ammonia medium. As a result of this reaction, a blue substance formed. Name this compound.

- A. Indophenol
- B. Azo dye
- C. Murexide
- D. Thiochrome
- E. Acrolein

5. Nitrofural (Furacillin) is a synthetic antibacterial agent. What parameter must be measured by an analytical pharmacist when quantifying this agent by means of spectrophotometry?

- A. Optical density
- B. Melting point
- C. Angle of rotation
- D. Refractive index
- E. pH of a solution

6. A series of glutamic acid substance that is an optically active substance undergoes certification at an analytical and quality control laboratory. What parameter must be determined, if identification is being carried out using the polarimetry technique?

- A. Angle of rotation
- B. Optical density
- C. Refractive index
- D. pH of a solution
- E. Density

7. A chemical laboratory checks the quality of medicines. What substance can be quantitatively analyzed by determining the nitrogen after mineralization?

- A. Glutamic acid
- B. Salicylic acid
- C. Calcium gluconate
- D. Ascorbic acid
- E. Sodium benzoate

8. In a laboratory for quality control of medical products, alkalimetry is used to determine ascorbic acid in a vitamin supplement. This method is based on a certain chemical process. Name this process.

- A. Neutralization
- B. Complexation
- C. Hydrolysis
- D. Oxidation
- E. Reduction

9. Based on its chemical structure, glycerol trinitrate antianginal agent (nitroglycerin) is a nitrate ester. What reaction is used to identify this substance by nitrate ions?

- A. Hydrolysis
- B. Pyrolysis
- C. Oxidation
- D. Decarboxylation
- E. Dehydration

10. Adrenaline has two phenolic hydroxyl groups in its structure, which causes the chemical instability of the compound. What chemical process can occur, if this substance is stored improperly?

- A. Oxidation
- B. Reduction
- C. Polymerization
- D. Hydrolysis
- E. Weathering

11. A laboratory conducts analysis of a phenylephrine hydrochloride substance (Mesatonum). What reagent is used to identify it?

- A. Copper(II) sulfate
- B. Potassium bromide
- C. Magnesium sulfate
- D. Sodium nitrate
- E. Ammonium chloride

12. An analytical pharmacist identifies a hydrochlorothiazide substance. In this case, sulfate ion that formed after mineralization of the substance can be determined using the reaction with a certain solution. Name this solution.

- A. Barium chloride solution
- B. Copper(II) sulfate solution
- C. Sodium hydroxide solution
- D. Cobalt nitrate solution
- E. Silver nitrate solution

13. An analytical pharmacist conducts an express analysis of a sedative mixture with sodium bromide. What method is used to quantify sodium bromide?

- A. Argentometry
- B. Complexonometry
- C. Alkalimetry
- D. Acidimetry
- E. Nitritometry

14. Sulfadimethoxine is a sulfonamide antibacterial drug with a primary aromatic amino group. What method is used for its quantification?

- A. Nitritometry
- B. Iodometry
- C. Acidimetry
- D. Argentometry
- E. Permanganatometry

15. The structure of semisynthetic penicillins (amoxicillin trihydrate, ampicillin sodium) contains a fragment of α -amino acids. What reagent makes identification of this structural fragment possible?

- A. Ninhydrin
- B. Diphenylamine
- C. Formaldehyde
- D. Cyanobromide
- E. Aniline

16. Quantification of sodium benzoate expectorant is carried out using acidimetry in a non-aqueous medium. What reagent is used as a solvent for this purpose?

- A. Anhydrous acetic acid
- B. Pyridine
- C. Benzene
- D. Dimethylformamide
- E. Dimethyl sulfoxide

17. Oxazepam is a benzodiazepine derivative. What method is used for its quantification?

- A. Acidimetry in a non-aqueous medium
- B. Reverse complexonometry
- C. Alkalimetric substitution titration
- D. Direct bromatometry
- E. Alkalimetry in an aqueous medium

18. An analytical pharmacist at a quality control laboratory uses iodometry to quantify metamizole sodium. What indicator is used for this purpose?

- A. Starch
- B. Murexide
- C. Phenolphthalein
- D. Ferroin
- E. Tropeolin 00

19. A laboratory for quality control of medical products certifies hormone drugs. What reagent is used to determine steroid cycles?

- A. Concentrated sulfuric acid
- B. Diluted nitric acid
- C. Sodium nitrite solution
- D. Diphenylamine solution
- E. Magnesium sulfate solution

20. Various chromatographic methods are used to control the quality of medical products. What type of chromatography is conducted on a sheet of filter paper, when mobile liquid phase moves on its surface and along its capillaries?

- A. Paper chromatography
- B. Adsorption chromatography
- C. Gas chromatography
- D. Thin-layer chromatography
- E. Ion-exchange chromatography

21. An analytical pharmacist at a laboratory for quality control of medical products uses thioacetamide reagent to test a procaine hydrochloride substance. If this test produces a brown coloration, it indicates the presence of a certain admixture. Name this admixture.

- A. Heavy metals
- B. Potassium
- C. Aluminum
- D. Magnesium
- E. Calcium

22. A pharmacist has prepared suppositories with novocaine (procaine) hydrochloride using a rolling technique. The novocaine hydrochloride content is less than 5%. How is this substance introduced into the base in this case?

- A. Dissolution in the minimum amount of water
- B. Dissolution in the minimum amount of castor oil
- C. Dissolution in the minimum amount of alcohol-water-glycerin mixture
- D. Dissolution in the melted base
- E. Dissolution in ethyl alcohol

23. Atropine sulfate is a drug with a cholinolytic effect. A certain component in its structure makes it possible to quantify atropine sulfate using acidimetry in a non-aqueous medium. Name this structural component.

- A. Tertiary nitrogen atom
- B. Alcohol hydroxyl
- C. Phenyl radical
- D. Ester group
- E. Bound sulfuric acid

24. An analytical pharmacist uses nitritometry to quantify a sulfathiazole antibacterial agent. This method was chosen because of the presence of a certain functional group. Name this group.

- A. Primary aromatic amino group
- B. Aldehyde group
- C. Carboxylic group
- D. Sulfo group
- E. Hydroxyl group

25. An expert at the laboratory of the pharmaceutical product certification center tests a chloramphenicol substance. What instrument must be used when determining the specific optical rotation?

- A. Polarimeter
- B. Spectrophotometer
- C. Viscometer
- D. Refractometer
- E. Potentiometer

26. Alkalimetry in a non-aqueous medium is used for quantification of a phenobarbital substance. What reagent is used as a solvent for this purpose?

- A. Dimethylformamide
- B. Glacial acetic acid
- C. Acetic anhydride
- D. Formic acid
- E. Ethyl alcohol

27. Corglycon herbal preparation is used as a cardiogenic agent in cardiovascular diseases. It is obtained from leaves of a certain medicinal plant. Name this plant.

- A. *Convallaria majalis*
- B. *Digitalis purpurea*
- C. *Erysimum diffusum*
- D. *Eucalyptus*
- E. *Datura*

28. An analytical pharmacist uses alkalimetry with potentiometric detection of the titration endpoint to quantify the lidocaine hydrochloride content. What solution is used as a titrant in this case?

- A. Sodium hydroxide solution
- B. Hydrochloric acid solution
- C. Potassium bromate solution
- D. Sodium nitrite solution
- E. Cerium sulfate solution

29. A pharmacist needs to prepare powders, using the following prescription:

Rp.: Camphorae 0.1

Sacchari 0.25

M.f.pulv.

D.t.d.N 10

S. Take one powder thrice a day.

What is the optimal preparation technique in this case?

- A. Fill the mortar pores with glucose and pour it out on a capsule, comminute camphor with alcohol, add glucose from the capsule, mix the ingredients
- B. Measure out camphor into the mortar, add glucose, mix the ingredients
- C. Fill the mortar pores with glucose and pour it out on a capsule, comminute camphor, mix the ingredients
- D. Put camphor between the layers of glucose, mix the ingredients
- E. Comminute glucose with alcohol in a mortar, add camphor, mix the ingredients

30. Ethylmorphine hydrochloride belongs to the drugs, the sale of which is regulated. What maximum amount of this drug can be sold on a prescription for eye drops or an ointment?

- A. No more than 1 gram
- B. No more than 2 grams
- C. No more than 0.5 grams
- D. No more than 1.5 grams
- E. No more than 3 grams

31. *Folia Uvae ursi* is a uroantiseptic agent. What is a permissible admixture in this herbal raw material?

- A. *Folia Vitis idaeae*
- B. *Folia Digitalis lanata*
- C. *Folia Cotini coggygiae*
- D. *Folia Urticae*
- E. *Herba Bursae pastoris*

32. When preparing suspensions, the medicinal substance must be ground with a small amount of liquid. What is the optimal amount of liquid for comminution of 20 g of zinc oxide according to the Deryagin law?

- A. 10 mL
- B. 5 mL
- C. 2 mL
- D. 1 mL
- E. 0.5 mL

33. A pharmacy prepares a 2% glucose solution for infusions. What excipient is used to ensure the isotonicity of this solution?

- A. Sodium chloride
- B. Sodium nitrate
- C. Sodium sulfate
- D. Sodium sulfite
- E. Boric acid

34. What herbal raw material is used industrially as a source of tannins?

- A. *Folium Cotini coggygriae*
- B. *Rhizomata Bistortae*
- C. *Rhizomata et radix Sanguisorbae*
- D. *Fructus Viburni*
- E. *Rhizomata Bergeniae*

35. Name the ready-to-use dosage form that is a gelatin capsule, filled with microcapsules that have an oil shell.

- A. Spansule
- B. Tubatine
- C. Pearl
- D. OROS tablet
- E. Microcapsule

36. What techniques of extract purification are used in production of tinctures?

- A. Settling at the temperature of 8–10°C, filtration
- B. Extractive purification techniques in a liquid-liquid system
- C. Denaturation, filtration, sorption
- D. Dialysis, settling
- E. Solvent replacement, settling, filtration

37. A pharmacist prepares an ointment containing novocaine hydrochloride with concentration of 1%. How should novocaine hydrochloride be introduced into a hydrophobic base?

- A. Dissolve in purified water, emulsify with anhydrous lanolin
- B. Dissolve in ethyl alcohol, add petroleum jelly
- C. Comminute with liquid paraffin, add petroleum jelly
- D. Comminute with alcohol or ether, emulsify with anhydrous lanolin
- E. Comminute with glycerin, add petroleum jelly

38. The Kratal drug is used as a cardioprotective agent. What is the herbal source of this drug?

- A. *Crataegus* fruits
- B. *Paeonia* grass
- C. *Digitalis* leaves
- D. *Convallaria* leaves
- E. *Mentha* leaves

39. The ampoule workshop of a factory produces solutions for injections. Name the group of solutions, to which ascorbic acid solution for injections belongs.

- A. Easily oxidized solutions
- B. Solutions of the substances that cannot undergo thermal sterilization
- C. Solutions of the salts that are formed by weak bases and strong acids
- D. Solutions of the salts that are formed by strong bases and weak acids
- E. Solutions of the substances that require special purification

40. Powders make up a large portion of extemporaneous preparations. What component can be introduced into powders without preliminary comminution?

- A. Basic bismuth nitrate
- B. Ascorbic acid
- C. Camphor
- D. Xeroform
- E. Calcium gluconate

41. Chemical analysis of *Helichrysum* flowers resulted in a positive cyanidin test. What class of compounds is present in the flowers, as indicated by this reaction?

- A. Flavonoids
- B. Polysaccharides
- C. Coumarins
- D. Saponins
- E. Alkaloids

42. What qualitative parameter is not determined for coated tablets?

- A. Abrasion resistance
- B. Solubility
- C. Ability to disintegrate
- D. Average mass and deviation from it
- E. Uniformity of dosage units

43. What additional technological technique should be used, when preparing copper sulfate solutions?

- A. Grinding in a mortar with water
- B. Heating
- C. Preliminary dissolution in glycerin
- D. Preliminary dissolution in a 95% alcohol solution
- E. Adding activated carbon

44. What main characteristic distinguishes water for injections from purified water?

- A. Apyrogenicity
- B. pH value
- C. Absence of mechanical inclusions
- D. Absence of heavy metals
- E. Method of obtaining

45. A pharmacist prepares rectal suppositories with cocoa butter that contain less than 5% of Dimedrol (diphenhydramine). What is the optimal way of introducing the substance into the base in this case?

- A. Dissolving in the minimum amount of purified water
- B. Dissolving in olive oil
- C. Dissolving in melted cocoa butter
- D. Dissolving in liquid paraffin
- E. Dissolving in alcohol

46. What is the name of the concept, where consumers' willingness to purchase a product is supported by their purchasing power?

- A. Demand
- B. Supply
- C. Advertising
- D. Sales
- E. Marketing

47. A pharmacy needs to prepare a 10% alcohol solution of iodine. What concentration of ethanol must be used in this case?

- A. 95%
- B. 96%
- C. 40%
- D. 70%
- E. 60%

48. A pharmacy makes extemporaneous drugs. Who sets the retail prices and labor charges for these pharmacy-made medicines?

- A. Pharmacy
- B. Local council
- C. Inspectorate for medicine quality control
- D. The Ministry of Health
- E. —

49. A herbal raw material (fruits) was received for analysis. It consists of black shiny drupes 8 mm in diameter that contain one large, very hard, spherical, light brown seed. Chemical analysis detects the presence of condensed tannins. What plant is the source of this herbal raw material?

- A. *Prunus padus*
- B. *Vaccinium myrtillus*
- C. *Ribes nigrum*
- D. *Schizandra chinensis*
- E. *Rhamnus cathartica*

50. What is the name of the list of effective and safe medicines and medical products for prevention, diagnostics, and treatment of the most common pathological conditions, based on their significance for the healthcare of a certain country?

- A. Essential medicines
- B. Controlled drugs list
- C. Over-the-counter medicines
- D. Substandard drugs
- E. Precursors

51. A sudden power outage occurred in a pharmacy and its cash register stopped working. What must be used during this period for settlement transactions?

- A. Cash logbook
- B. Cash receipt and withdrawal orders
- C. Invoices
- D. Payrolls
- E. Payment orders

52. In the course of its commercial activity, a pharmacy performs cashless transactions. What type of account must be opened in this case in a banking establishment for the purpose of storing the monetary funds and performing all types of transactions with such accounts, according to the current Ukrainian legislation?

- A. Current account
- B. Temporary account
- C. Currency account
- D. Card account
- E. Deposit account

53. One of the main duties of a cashier is to conduct receipt and withdrawal cash transactions. Which of the following is a

withdrawal transaction?

- A.** Taking out the received sales proceeds for transferring them to the current account
- B.** Sales proceeds received by the pharmacy from the sale of medical products
- C.** Sales proceeds received by the retail network
- D.** Receipt of funds for salary advance payments
- E.** Return of unused imprest funds

54. Thymol and carvacrol are the main active ingredients of *Thymus serpyllum*. To what class of bioactive substances do they belong?

- A.** Essential oils
- B.** Flavonoids
- C.** Alkaloids
- D.** Iridoids
- E.** Xanthones

55. Bioactive substances of this plant have secretolytic, antispasmodic, antifatulent, and slight diuretic effect. Its essential oil is used in making of gripe water. What plant is it?

- A.** *Foeniculum vulgare*
- B.** *Calendula officinalis*
- C.** *Betula pendula*
- D.** *Crataegus sanguinea*
- E.** *Tanacetum vulgare*

56. A pharmacist prepares an oil emulsion with menthol. How should menthol be introduced in this case?

- A.** Menthol must be dissolved in oil before preparing the primary emulsion
- B.** Menthol must be comminuted in a mortar with several drops of alcohol and then mixed with the primary emulsion
- C.** Menthol must be dissolved in the purified water
- D.** Menthol must be comminuted first with the emulsifier and then with the part of water prepared for the dilution of the primary emulsion
- E.** Menthol must be introduced as a suspension into the prepared emulsion

57. In the course of the pharmacotherapy for exacerbation of chronic bronchitis, the patient developed dyspeptic disorders, photodermatitis, and disturbed hepatic function. Which one of the prescribed drugs could have caused these effects?

- A.** Doxycycline
- B.** Acetylcysteine
- C.** Codeine phosphate
- D.** Ascorbic acid
- E.** Ambroxol

58. Among the listed antibacterial drugs, select the group of drugs that are nephro- and ototoxic.

- A.** Aminoglycosides
- B.** Macrolides
- C.** Fluoroquinolones
- D.** Nitrofurans
- E.** Amphenicols

59. Depending on their degree of liquidity, pharmacy assets are divided into 4 groups. What are the most liquid assets (highly liquid)?

- A.** Cash and its equivalents
- B.** Stocks of goods and materials
- C.** Receivables owed by debtors
- D.** Intangible assets
- E.** Fixed assets

60. The head manager of a pharmacy has prepared the staff schedule for the next month. What type of planning is aimed at forming narrow, detailed, short-term plans?

- A.** Operational planning
- B.** Financial planning
- C.** Business planning
- D.** Strategic planning
- E.** Indicative planning

61. A 44-year-old man was diagnosed with chronic hyperacid gastritis. What pharmacological group of drugs would be optimal in this case?

- A.** Proton pump inhibitors
- B.** Inhibitors of proteolytic enzymes
- C.** β -blockers
- D.** α -blockers
- E.** Glucocorticosteroids

62. A pharmacy has received medical products from a pharmaceutical warehouse. What drug from the list given below is a controlled substance and therefore is subject to accounting?

- A.** Dimedrol (Diphenhydramine), tablets
- B.** Analgin (Metamizole), ampoules
- C.** Paracetamol, tablets
- D.** Diclofenac, ampoules
- E.** Ibuprofen, capsules

63. A 24-year-old pregnant woman complains of a headache that occurred

after a stressful situation. What is the drug of choice in this case?

- A. Paracetamol
- B. Metamizole sodium
- C. Naproxen
- D. Acetylsalicylic acid
- E. Indomethacin

64. A pharmacy prepares triturations. What filler is used for this purpose?

- A. Lactose
- B. Glucose
- C. Corn starch
- D. Rice starch
- E. Mannitol

65. The substances and their salts that are used in manufacturing and purification of narcotic and psychotropic substances must be accounted for in a pharmacy. How are they classified for this purpose?

- A. Precursors
- B. Toxic substances
- C. Potent substances
- D. Narcotic substances
- E. Psychotropic substances

66. What type of control is a part of functional duties of an authorized person at a pharmacy warehouse?

- A. Incoming control
- B. Chemical control
- C. Control when dispensing medicine
- D. Written control
- E. Organoleptic control

67. What technique is used in production of soft capsules with a seam?

- A. Compression technique
- B. Dripping technique
- C. Immersion technique
- D. Pouring technique
- E. Indentation technique

68. A doctor has prescribed a potassium-sparing diuretic for a 35-year-old patient. Which one of the listed drugs belongs to this group?

- A. Triamterene
- B. Furosemide
- C. Bisoprolol
- D. Prazosin
- E. Diltiazem

69. After several drops of iron(III) chloride solution were added into an aqueous decoction of oak bark, it colored black-green. What substances are present in the decoction, as indicated by this effect?

- A. Tannins
- B. Essential oils
- C. Polysaccharides
- D. Alkaloids
- E. Vitamins

70. What method is used to sterilize thermolabile eye drops?

- A. Filtering
- B. Chemical sterilization
- C. Sterilization with vapor under pressure
- D. Gas sterilization
- E. Hot air sterilization

71. When harvesting *Helichrysum arenarium* flowers, it is necessary to prevent admixtures that look like hemispherical or spherical inflorescences colored white, pink, or red. What plant do they belong to?

- A. *Antennaria dioica*
- B. *Gnaphalium uliginosum*
- C. *Viola arvensis*
- D. *Arctium tomentosum*
- E. *Matricaria recutita*

72. A 17-year-old boy fell ill with an acute intestinal infection. Select from the list an antibacterial drug that is not absorbed in the intestine.

- A. Nifuroxazide
- B. Sulfadimethoxine
- C. Phthalazol (Phthalylsulfathiazole)
- D. Sulfacyl sodium (Sulfacetamide)
- E. Co-trimoxazole

73. What parameter mainly determines the choice of an extractant for obtaining individual substances?

- A. Selectivity towards active substances
- B. Cost
- C. Pharmacological inertness
- D. Thermostability
- E. Anti-hydrolysis effect

74. What type of responsibility implies a certain level of voluntary response to societal problems on the part of a pharmaceutical organization?

- A. Social
- B. Legal
- C. Administrative
- D. Disciplinary
- E. Criminal

75. *Echinacea purpurea* grass has an immunostimulating effect. What method is used to determine the quantitative content of bioactive substances in this herbal raw material according to the State

Pharmacopoeia of Ukraine?

- A. Liquid chromatography
- B. Spectrophotometry
- C. Titration in non-aqueous solvents
- D. Photoelectrocolorimetry
- E. Back titration

76. During the course of treatment for chronic heart failure, the patient developed bradycardia, nausea, and vomiting and started to see yellow-green circles. What group of drugs has caused these signs?

- A. Cardiac glycosides
- B. Diuretics
- C. ACE inhibitors
- D. Nitrates
- E. β -blockers

77. A pharmaceutical company performs quality control of emulsions. What method is used to determine colloidal stability?

- A. Centrifugation
- B. Microscopy
- C. Conductometry
- D. Potentiometry
- E. Titrimetry

78. Two types of herbal raw material are harvested from *Ribes nigrum* plant for medicinal purposes. Name them.

- A. Fruits and leaves
- B. Flowers and leaves
- C. Fruits and bark
- D. Buds and fruits
- E. Fruits and roots

79. A pharmaceutical company produces ointments. Name the technological process of ensuring that ointments have a uniform structure.

- A. Homogenization
- B. Obtaining the base
- C. Dispersion
- D. Mixing components with the base
- E. Obtaining the concentrate

80. A pharmaceutical company produces medicines in soft dosage forms. What quality indicator is determined only for heterogeneous soft dosage forms?

- A. Particle size
- B. pH
- C. Authenticity
- D. Microbiological purity
- E. Quantitative content

81. The marketing department of a pharmaceutical company has divided

consumers into groups according to certain criteria and characteristics. What marketing method was used in this case?

- A. Market segmentation
- B. Expert assessment of the market
- C. Positioning
- D. Diversification
- E. Market share calculation

82. The marketing team of a pharmaceutical company has performed a comparative analysis of the internal environment and external conditions. They have analyzed strengths and weaknesses, opportunities and threats. What type of analysis was conducted by the marketing team?

- A. SWOT analysis
- B. ABC analysis
- C. VEN analysis
- D. PEST analysis
- E. BCG matrix

83. The marketing department of a pharmaceutical factory has determined that there is a seasonal fluctuation in demand for cold medicines. What type of demand is it?

- A. Irregular
- B. Latent
- C. Irrational
- D. Absent
- E. Negative

84. When identifying *Laminaria* thalli according to the State Pharmacopoeia of Ukraine, a qualitative reaction must be conducted to detect certain substances. Name these substances.

- A. Alginic acids
- B. Slime
- C. Reducing sugars
- D. Total iodine
- E. Polysaccharides

85. A 46-year-old patient has chronic bronchitis. What medicine can be purchased at a pharmacy to facilitate the discharge of thick and viscous sputum?

- A. Ambroxol
- B. Libexin (Prenoxdiazine)
- C. Butamirate
- D. Dextromethorphan
- E. Salbutamol

86. The results of the financial and economic activity of a pharmacy for the last quarter show that its over-the-counter department was unable to meet the planned indicators. What function of

management should be used to remedy this situation?

- A. Regulating
- B. Planning
- C. Directing
- D. Motivation
- E. Controlling

87. An authorized person performs incoming quality control of medicines at a pharmacy. What type of control is it?

- A. Preliminary
- B. Current
- C. Final
- D. Organizational
- E. Strategic

88. In the marketing department, a conflict arose between two managers regarding the division of their functional responsibilities. The head of the marketing department found a compromise solution that suited the both employees. What type of conflict is it, based on its outcome?

- A. Functional
- B. Futile
- C. Dysfunctional
- D. Optimal
- E. Integral

89. A joint-stock company includes two domestic pharmaceutical companies and one foreign pharmaceutical company, as well as extensive wholesale and retail networks. What type of pharmaceutical marketing system is it?

- A. Vertical
- B. Horizontal
- C. Matrix
- D. Line
- E. Staff

90. A woman suddenly developed an attack of angina pectoris. To stop the attack, she took a medicine. After taking this medicine she developed an intense headache, red face, and tachycardia. What group of drugs typically has such side effects?

- A. Nitrates
- B. Diuretics
- C. β -blockers
- D. Calcium channel blockers
- E. α -adrenergic agonists

91. A man has bought nitroglycerine for sublingual administration at a pharmacy. He wants to know, what side effects might develop after taking this medicine. What is

the most common side effect of this drug?

- A. Headache
- B. Increased blood pressure
- C. Drowsiness
- D. Urinary retention
- E. Dry cough

92. In the postoperative period, a man was receiving promedol (trimeperidine) for a long time. When this drug was discontinued, the patient developed psychic and somatic disturbances. What phenomenon is observed in this case?

- A. Withdrawal syndrome
- B. Idiosyncrasy
- C. Tachyphylaxis
- D. Steal syndrome
- E. Rebound effect

93. A man developed bladder atony in the postoperative period. What drug must be prescribed to the patient in this case?

- A. Prozerin (Neostigmine)
- B. Atropine
- C. Verapamil
- D. Magnesium sulfate
- E. Dimedrol (Diphenhydramine)

94. A pharmaceutical factory produces gelatin capsules. What is introduced into the gelatin mass to ensure antimicrobial resistance of the shells?

- A. Preservatives
- B. Plasticizers
- C. Film formers
- D. Coloring agents
- E. Stabilizers

95. The stock of goods is an important indicator of how well the sales are supplied with goods. What prices are taken into account, when planning the norms for the stock of goods at a pharmacy?

- A. Wholesale prices
- B. Retail prices
- C. Indicative prices
- D. Negotiable prices
- E. Fixed prices

96. What drug is indicated in cases of overdosing on neodicumarin or other indirect anticoagulants?

- A. Vicasolum (Menadione)
- B. Iron(II) gluconate
- C. Enoxaparin
- D. Streptokinase
- E. Naloxone

97. Fresh cranberries are used as a diuretic and an antimicrobial agent. What active substances are contained in this herbal raw material?

- A.** Organic acids
- B.** Phenolic glycosides
- C.** Polysaccharides
- D.** Vitamins
- E.** Alkaloids

98. The system of taxes is one of the main components of the taxation system. How are taxes and dues classified by the type of payment into the budget?

- A.** Direct and indirect
- B.** Permanent and variable
- C.** Stable and local
- D.** Flexible and variable
- E.** Variable and stable

99. Which one of the listed substances is thermolabile?

- A.** Collargol
- B.** Sodium hydroxide
- C.** Sodium chloride
- D.** Calcium chloride
- E.** Calcium gluconate

100. A 43-year-old woman complains of heartburn after eating spicy foods. What would be the drug of choice for symptomatic treatment in this case?

- A.** Antacid
- B.** Antispasmodic
- C.** Analgesic
- D.** Enzymatic
- E.** Sedative

101. When forming the product distribution system, a drug manufacturer focuses on the maximum involvement of the network of wholesale and retail intermediaries. What type of sales does the manufacturer choose in this case?

- A.** Intensive
- B.** Exclusive
- C.** Selective
- D.** Mixed
- E.** Direct

102. A new medicine has appeared on the pharmaceutical market. It is characterized by low sales, low profits, and large marketing expenses for advertising. What stage of the product life cycle is it?

- A.** Introduction to the market
- B.** Growth in demand
- C.** Pricing
- D.** Oversaturation of the market
- E.** Decline in demand

103. What anti-inflammatory and analgesic drug is made from *Alnus* infructescences?

- A.** Altan
- B.** Polyphytol-1
- C.** Rotocan
- D.** Tannalbin
- E.** Vicaline

104. A wholesale and retail company sells medicines and medical products to wholesale companies, pharmacies, and the populace. What type of business activity is it?

- A.** Commercial
- B.** Manufacturing
- C.** Financial
- D.** Financial and credit
- E.** Investment

105. A manager of a wholesale pharmaceutical company is responsible for passing tasks directly to their executors and monitoring of task execution. What level of management is it?

- A.** Technical
- B.** Administrative
- C.** Institutional
- D.** Upper management
- E.** Middle management

106. Managers of a wholesale pharmaceutical company make decisions regarding the supplier selection and procurement of medicines at the minimum cost. What type of logistics is used in this case?

- A.** Procurement logistics
- B.** Sales logistics
- C.** Production logistics
- D.** Personnel logistics
- E.** Information logistics

107. What part of the accounting balance sheet shows the amount of net profit?

- A.** Equity
- B.** Non-current assets
- C.** Current capital
- D.** Loan capital
- E.** —

108. In a pharmacy, inventory results have revealed a shortage of products that was within the limits of natural loss. At what prices will these products be written off as losses?

- A. Wholesale prices
- B. Contractual prices
- C. Retail prices
- D. Procurement prices
- E. Negotiable prices

109. Examination detected atrophic gastritis and B₁₂-deficiency anemia in a patient. What drug should be prescribed in this case?

- A. Cyanocobalamin
- B. Iron(II) fumarate
- C. Erythropoietin
- D. Folic acid
- E. Sodium nucleinate

110. After administration of insulin, a patient suddenly developed hunger, limb tremor, agitation, and moist skin. What complication is likely developing in the patient?

- A. Hypoglycemic coma
- B. Seizure syndrome
- C. Hyperglycemic coma
- D. Collapse
- E. Pulmonary edema

111. A patient that receives indirect anti-coagulant warfarin took acetylsalicylic acid to treat fever. This combination of drugs is dangerous and increases the risk of developing an adverse reaction. What side effect can develop in the patient as a result?

- A. Hemorrhage
- B. Osteoporosis
- C. Neurotoxicity
- D. Cardiotoxicity
- E. Dysbiosis

112. What is the name of the tablets without shell, where acids and carbonates make up the majority of the mass?

- A. Effervescent
- B. Caples
- C. Compressed
- D. Acidic
- E. Soluble

113. What drug is used for prevention and treatment of influenza and acute respiratory viral infections?

- A. Interferon
- B. Amoxicillin
- C. Ceftriaxone
- D. Acetylsalicylic acid
- E. Metamizole sodium

114. In a pharmaceutical company, work

groups are subordinated to both the project manager and the head of the functional unit. What type of organizational structure is it?

- A. Adaptive (matrix)
- B. Functional
- C. Line
- D. Line and staff
- E. —

115. A pharmacy undergoes audit. What assets are classified as fixed assets?

- A. Commercial equipment
- B. Cash
- C. Stock of goods
- D. Equity
- E. Share capital

116. Flowers of a medicinal plant that contains carotenoids are a component of Wundahyl ointment that has regenerative, anti-inflammatory, and anti-allergic effect. Name this medicinal plant.

- A. *Calendula officinalis*
- B. *Glycyrrhiza glabra*
- C. *Bidens tripartita*
- D. *Salvia officinalis*
- E. *Eucalyptus viminalis*

117. A woman suffers from intense retrosternal pain that radiates into her left shoulder. What drug would be optimal as a first aid in this case?

- A. Nitroglycerin
- B. Amiodarone
- C. Verapamil
- D. Digoxin
- E. Eufilin (Theophylline)

118. What material responsibility does the cashier of a pharmacy have?

- A. Personal responsibility
- B. Collective responsibility
- C. Team responsibility
- D. Administrative responsibility
- E. Criminal responsibility

119. What parameters are measured during evaluation of thick extracts?

- A. Moisture content
- B. Color
- C. Density
- D. Alcohol content
- E. Filler content

120. What amount of atropine sulfate must be weighed out to prepare 5.0 of triturati-on (1:100)?

- A. 0.05 gr
- B. 1.0 gr
- C. 0.1 gr
- D. 0.5 gr
- E. 0.01 gr

121. Specify the external environment factors that directly influence the activity of a company.

- A. Consumers and competitors
- B. The state of the economy
- C. Political changes
- D. Sociocultural factors
- E. Scientific and technological progress

122. A pharmaceutical company produces a small range of medicines intended for one market, forms groups of marketers, and appoints managers for marketing functions. Towards what marketing model is this company oriented?

- A. Functional
- B. Product-oriented
- C. Regional
- D. Segment-oriented
- E. Combined (matrix)

123. A pharmaceutical company produces hormonal drugs. What raw materials are used to obtain insulin?

- A. Pancreas of cattle and pigs
- B. Anterior lobe of the pituitary gland
- C. Thyroid gland
- D. Adrenal cortex
- E. Posterior lobe of the pituitary gland

124. What drug is listed as a psychotropic substance?

- A. Phenazepam
- B. Analgin (Metamizole)
- C. Paracetamol
- D. Canephron
- E. Phencarolum (Quifenadine)

125. A pharmacy accountant conducts an asset analysis. Which of the following belongs to the total assets of a pharmacy?

- A. Current and non-current assets
- B. Salaries of pharmacy employees
- C. Social insurance obligations
- D. Obligations towards budget
- E. Borrowed funds

126. How many drops of 95% ethyl alcohol must be added for comminution of 1.0 g of menthol?

- A. 10 drops
- B. 15 drops
- C. 20 drops
- D. 30 drops
- E. 25 drops

127. What substance is a colorant?

- A. Riboflavin
- B. Caffeine
- C. Boric acid
- D. Thymol
- E. Collargol

128. A pharmaceutical company identified the best employees of the month and awarded them with letters of commendation and valuable gifts. What function of management was used in this case?

- A. Motivation
- B. Organizing
- C. Planning
- D. Controlling
- E. Regulating

129. *Potentilla* rhizomes are used as an astringent. What *Potentilla* species is included in the State Pharmacopoeia of Ukraine?

- A. *Potentilla erecta*
- B. *Potentilla alba*
- C. *Potentilla argentea*
- D. *Potentilla nivea*
- E. *Potentilla anserina*

130. What economic indicator at a pharmacy depends on the level of procurement prices and selling prices of the goods that are being sold by the pharmacy?

- A. Commercial markup
- B. Expenses
- C. Liquidity
- D. Price index
- E. Solvency

131. A pharmacist prepares powders. What substance must be comminuted in the presence of a liquid excipient?

- A. Thymol
- B. Magnesium oxide
- C. Zinc sulfate
- D. Copper sulfate
- E. Glucose

132. What group of bioactive substances can be detected using hemolysis of erythrocytes and the frothing test?

- A. Saponins
- B. Polysaccharides
- C. Vitamins
- D. Flavonoids
- E. Alkaloids

133. What substance functions as a plasticizer in a gelatin capsule shell?

- A. Glycerin
- B. Gelatin
- C. Starch
- D. Isopropyl alcohol
- E. Methyl cellulose

134. What must be taken into account, when calculating compensation for a sick leave?

- A. Insured period
- B. Working record of service
- C. General record of service
- D. Duration of registration with a trade union
- E. Record of service with employment according to qualification

135. A pharmaceutical company produces ready-to-use medical products. For what dosage form does the State Pharmacopoeia of Ukraine regulate the time of complete deformation?

- A. Suppositories
- B. Ointments
- C. Gels
- D. Suspensions
- E. Creams

136. A pharmacy has received a prescription for an isotonic solution. What technique is used to calculate the necessary amount of the substance?

- A. Equivalence technique
- B. Deryagin law
- C. Three-layer technique
- D. Water absorption coefficient
- E. Volume expansion coefficient

137. A pharmacy has received a prescription for preparation of injection solutions. What type of control are solutions for injections subject to?

- A. Complete chemical control
- B. Qualitative control
- C. Quantitative control
- D. Questionnaire-based control
- E. They are not subject to control

138. Oak bark is standardized by its tannin content. What method is used to determine this group of bioactive substances according to the State Pharmacopoeia of Ukrai-

ne?

- A. Spectrophotometry
- B. Gravimetry
- C. Titrimetry
- D. Biological method
- E. Fluorimetry

139. A 32-year-old man with allergy symptoms (runny nose, sneezing, itchy skin) came to a pharmacy. He is a professional driver. What H_1 -histamine blocker can be recommended to this man, taking into account his profession?

- A. Loratadine
- B. Dimedrol (Diphenhydramine)
- C. Suprastin (Chloropyramine)
- D. Enterosgel
- E. Atropine sulfate

140. After the removal of a maxillary cyst, the dentist prescribed the patient an oral antibiotic to prevent postoperative bacterial complications. This antibiotic penetrates well into the bone tissue. Name this drug.

- A. Lincomycin
- B. Clarithromycin
- C. Streptomycin
- D. Nifuroxazide
- E. Amoxicillin

141. Dispersing or evacuation gases are used to dispense an aerosol product. How are they called?

- A. Propellants
- B. Activators
- C. Alcohols
- D. Oxygen
- E. Glycerin

142. What are the oblong tablets for oral administration called?

- A. Caplets
- B. Granules
- C. Tubatines
- D. Capsules
- E. Dragee

143. A pharmaceutical company produces sterile aqueous solutions for eye moistening and irrigation, as well as for soaking the materials that are applied to the eye. What type of dosage form is used in such solutions?

- A. Lotions
- B. Ointments
- C. Drops
- D. Inserts
- E. Sprays

144. The head manager of a pharmacy uses influence methods that concern property and financial interests of the employees. What management methods are used by the head manager?

- A. Economic
- B. Psychosocial
- C. Technological
- D. Sociopolitical
- E. Administrative

145. A pharmacy prepares an aqueous extract of *Thermopsis* grass. What components must be used by the pharmacist to prepare this aqueous extract?

- A. *Thermopsis* grass, hydrochloric acid solution, purified water
- B. *Thermopsis* grass, purified water, ammonia solution
- C. *Thermopsis* grass, sodium chloride, purified water
- D. *Thermopsis* grass, sodium bicarbonate, purified water
- E. *Thermopsis* tincture, purified water

146. A patient, who undergoes treatment for ischemic heart disease, has developed a cough without signs of a cold. Which one of the prescribed drugs could have caused such a side effect in this case?

- A. Losartan
- B. Drotaverine
- C. Nitroglycerin
- D. Aspirin (acetylsalicylic acid)
- E. Asparcam (potassium and magnesium aspartate)

147. A pharmaceutical company develops new dosage forms for its medicines. What type of product policy in marketing is it?

- A. Product modification
- B. Reduction of manufacturing
- C. Diversification
- D. Modernization
- E. Differentiation

148. A pharmacy has decided to obtain a license to make extemporaneous preparations. For this purpose it purchased a refrigerator, a cabinet dryer, and other industrial equipment. The purchased equipment belongs to the following type of assets:

- A. Fixed assets
- B. Package
- C. Goods
- D. Non-negotiable tangible assets
- E. Non-accountable assets

149. Licorice roots contain saponins. What reaction can prove their presence in the herbal raw material?

- A. Foaming reaction
- B. Dragendorff test
- C. Molisch test
- D. Reaction with iron(III) chloride
- E. Fehling test

150. What method is used to obtain menthol from peppermint essential oil?

- A. Freezing out
- B. Extraction with volatile solvents
- C. Enzymatic hydrolysis
- D. Enfleurage
- E. Extraction with non-volatile solvents