

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. Complexometry
- D. Nitritometry
- E. Acidimetry

2. The doctor has prescribed the patient an antispasmodic agent bendazol hydrochloride (Dibazol). Based on its chemical structure, bendazol hydrochloride is a derivative of:

- A. Benzimidazole
- B. Indole
- C. Acridine
- D. Purine
- E. Phenothiazine

3. Which one of the listed drugs is a glycoside antibiotic?

- A. Erythromycin
- B. Levomycetin (Chloramphenicol)
- C. Tetracycline
- D. Cephalexin
- E. Polymyxin

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

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

5. What parameter must be measured by an analytical pharmacist, when using spectrophotometry to quantify furacillin?

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

6. 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

7. A pharmaceutical factory produces Thiamazole (Merkazolil) that is a medicinal substance with an antithyroid effect. Select from the list one of the initial compounds in its synthesis.

- A. Methyl isothiocyanate
- B. Naphthoquinone
- C. Furfural
- D. Hydroxyquinoline
- E. Acridine

8. Natural penicillins are unstable at high temperatures and quickly break down in alkaline and acidic environments. What cycle causes such chemical properties of natural penicillins?

- A. β -lactam
- B. Pyridine
- C. Quinoline
- D. Furan
- E. Phenothiazine

9. An analytical pharmacist conducts a quantitative analysis of sodium benzoate and uses a hydrochloric acid solution as a titrant. What method of quantification is being used in this case?

- A. Acidimetry
- B. Complexometry
- C. Nitritometry
- D. Bromatometry
- E. Iodometry

10. An analytical pharmacist identifies a hydrochlorothiazide substance. In this case, sulfate ions 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

11. What solution should be used by an expert at the laboratory of the pharmaceutical product certification center to identify the medicines that contain potassium ions?

- A. Sodium cobaltinitrite
- B. Ammonium oxalate
- C. Barium chloride
- D. Sodium hydroxide
- E. Magnesium sulfate

12. What substance can be synthesized as a result of the condensation of 5-nitrofurfural with semicarbazide?

- A. Nitrofural (Nitrofurazone)
- B. Metronidazole
- C. Nitroxoline
- D. Norfloxacin
- E. Phthalazole (Phthalylsulfathiazole)

13. What semi-synthetic antibiotic can be synthesized in the process of reaction between 6-aminopenicillanic acid and phenylaminoacetic acid chloranhydride?

- A. Ampicillin
- B. Methacycline
- C. Rifampicin
- D. Cephalexin
- E. Amikacin

14. At the laboratory of pharmacopoeial analysis, glutamic acid is being identified using the method of thin-layer chromatography. What reagent is used to develop a chromatogram?

- A. Ninhydrin
- B. Pyridine
- C. Aniline
- D. Diphenylamine
- E. Cyanogen bromide

15. The process of rectification is used to make ethyl alcohol. This process is based on the following principle:

- A. Separation of a mixture consisting of mutually-miscible liquids with different boiling temperature into separate fractions
- B. Deep vacuum distillation
- C. Rinsing of exhausted raw material with 3–5 times the amount of ethanol
- D. Distillation with inert gases
- E. Technology of obtaining liquid extracts

16. At the laboratory of a pharmaceutical company, a corticosteroid medicinal substance — hydrocortisone acetate — is being analyzed. What cycle in its molecule causes the appearance of an intense bright yellow coloring, when concentrated sulfuric acid is added?

- A. Steroid cycle
- B. Pyridine cycle
- C. Xanthine cycle
- D. Naphthalene cycle
- E. Imidazole cycle

17. An analytical pharmacist of the quality control department analyzes the phenol substance. What method of quantification is used for this purpose?

- A. Bromatometry
- B. Complexometry
- C. Argentometry
- D. Permanganatometry
- E. Mercurimetry

18. Chromatographic methods are used in pharmaceutical analysis. What type of chromatography is based on reversible chemisorption of the ions of the analyte solution by the ionogenic groups of the sorbent?

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

19. The introduction of fluorine atoms into a glucocorticosteroid molecule results in a significant increase of the anti-inflammatory effect. What drug is a fluorine-derivative glucocorticoid?

- A. Betamethasone dipropionate
- B. Prednisone
- C. Cortisone acetate
- D. Prednisolone
- E. Hydrocortisone acetate

20. Acyclovir is a drug with the nucleoside structure, effective against herpes virus. What reaction of its transformation in the body is associated with its antiviral effect?

- A. Phosphorylation
- B. Oxidation
- C. Hydroxylation
- D. Hydrolysis
- E. Reduction

21. The quantification of acetylsalicylic acid using the method of direct alkali-metry is recommended to be carried out at the temperature no higher than 20°C to prevent a certain process from occurring. What process is it?

- A. Hydrolysis of the ester group
- B. Reduction of the medicinal substance
- C. Oxidation of the medicinal substance
- D. Decarboxylation of the medicinal substance
- E. Precipitation of the formed salt

22. A certain component in the structure of atropine sulfate 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

23. Drugs made from *Rauvolfia serpentina* roots are used in treatment of arterial hypertension. Authenticity of this herbal raw material can be confirmed by its content of:

- A. Reserpine
- B. Atropine
- C. Hyoscyamine
- D. Vinblastine
- E. Adonitoxin

24. What is present in the structure of procaine hydrochloride, making its alkalimetric titration possible?

- A. Bound hydrochloric acid
- B. Diethylamino group
- C. Ester bond
- D. Unsubstituted aromatic cycle
- E. Residue of n-aminobenzoic acid

25. An analytical pharmacist quantifies the ascorbic acid substance using the iodometric method. What indicator must be used in the process?

- A. Starch
- B. Methyl orange
- C. Bromophenol blue
- D. Phenolphthalein
- E. Murexide

26. Local anesthetic benzocaine can be identified using the reaction of iron(III) hydroxamate formation. What functional group makes it possible to conduct this reaction?

- A. Esther group
- B. Carboxylic group
- C. Ketone group
- D. Aldehyde group
- E. Sulfamide group

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

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

28. Alkalimetry in a non-aqueous medium is used for quantification of a phenobarbi-

tal 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

29. A pharmacist has prepared a suspension that contains basic bismuth nitrate. What method was used in the process of its preparation?

- A. Dispersion with turbidization
- B. Physical condensation
- C. Chemical condensation
- D. Solvent replacement method
- E. Continental method

30. What characteristic of adrenaline hydrochloride must be taken into account, by a pharmacist, when preparing the eye drops with this substance?

- A. Thermolability
- B. Low solubility in water
- C. Thermal stability
- D. Volatility
- E. Coloring agent characteristics

31. A pharmaceutical factory produces various types of tablets. What is the purpose of *Solublettae* tablets?

- A. Preparation of solutions for various pharmaceutical purposes
- B. Implantation
- C. Preparation of solutions for injections
- D. Sublingual administration
- E. Rectal administration

32. In production of phytodrugs, the extractant that remains in the herbal raw material is removed and used again in manufacturing. Name this process.

- A. Recuperation
- B. Rectification
- C. Extraction
- D. Sublimation
- E. Lyophilization

33. A pharmacist needs to prepare a powder, using the following formulation:

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. Place camphor between the layers of glucose, mix the ingredients

E. Comminute glucose with alcohol in a mortar, add camphor, mix the ingredients

34. To prepare an ointment, a pharmacist has additionally used paraffin. What is the role of paraffin in the compounding technology?

A. Densifier

B. Vehicle

C. Preservative

D. Emulsifier

E. —

35. At a pharmacy, the pharmacist makes vaginal suppositories. What is the permissible range of the average weight of such suppositories?

A. 1.5–6.0 g

B. 1.0–4.0 g

C. 2.0–6.5 g

D. 3.0–7.0 g

E. 4.0–7.5 g

36. Chemical analysis of *Helichrysum arenarium* flowers shows positive results of the cyanidin test. This reaction indicates the presence of the following class of compounds:

A. Flavonoids

B. Polysaccharides

C. Coumarins

D. Saponins

E. Alkaloids

37. Medicinal substances are introduced into multiphase ointments depending on their properties. How to introduce novocaine (procaine) hydrochloride into a vaseline-lanolin base?

A. First dissolve it in the minimum amount of water

B. Comminute it with glycerin

C. Comminute it with an alcohol or ether

D. Grind it with a part of the molten base

E. Dissolve it in the molten base

38. A pharmacy has received from its supplier a shipment of drugs that are included into the National Essential Drugs

List. What is the pricing policy for these drugs?

A. Controlled price

B. Free-of-control price

C. Fixed price

D. Contract price

E. Indicative price

39. When should subterranean plant organs — roots, rhizomes, bulbotubers — be harvested?

A. In early spring or autumn

B. During the period of vegetation

C. Before the bloom

D. During the bloom

E. At the end of the bloom

40. Why are leavening agents introduced into the tablet mass?

A. Ensuring rapid mechanical destruction of the tablets in a liquid medium

B. Obtaining tablets of the required weight

C. Improvement of the granulation process

D. Making it easier to push the tablets out of the matrix

E. Taste improvement

41. What stabilizer must the pharmacist add, when preparing an atropine sulfate solution for injections?

A. Hydrochloric acid

B. Sodium hydroxide

C. Sodium bicarbonate

D. Sodium metabisulfite

E. Ascorbic acid

42. Pharmaceutical workers decided to organize a business. What is the basis of the concept of "limited liability company"?

- A.** A company, the members of which bear the liability for the company's debts within the amount of their contributions
- B.** A company, the members of which bear the liability for the company's debts within the amount of their contributions, and if these amounts are insufficient, all the members are equally liable to cover the debt with their personal property
- C.** A company, the members of which bear additional solidary liability for the company's obligations with all their property
- D.** A company, the members of which bear additional solidary liability for the company's obligations with all their property, while the company's investors bear liability only in the amount of their investments
- E.** A company, the members of which bear full liability
- 43.** A pharmacy prepares an aqueous extract of thermopsis grass. What components should be used to prepare this aqueous extract?
- A.** Thermopsis grass, hydrochloric acid solution 1:10, purified water
- B.** Thermopsis grass, sodium bicarbonate, purified water
- C.** Thermopsis grass, sodium chloride, purified water
- D.** Thermopsis grass, purified water
- E.** Thermopsis tincture, purified water
- 44.** What is a motive in the context of management functions?
- A.** A conscious incentive to act in a certain way
- B.** Something that is important for a person
- C.** A certain discomfort, a feeling that something is lacking
- D.** Psychological characteristics of people that help them acquire certain types of knowledge
- E.** The end result, to achieve which an effort is made
- 45.** What prescription form is used to prescribe psychotropic drugs in their pure form or in a mixture with indifferent substances for the dispensation free of charge or at a discount?
- A.** Two prescription forms f-1 and f-3
- B.** Prescription form f-1
- C.** Prescription form f-3
- D.** Two copies of prescription form f-1
- E.** Two copies of prescription form f-3
- 46.** The head manager of a pharmacy has transferred to the deputy head manager

the authority to select the range of products for sale and make decisions about the nomenclature and amount of medicines and medical products to be purchased from suppliers and the terms of such purchase contracts. What is this action called in the management theory?

- A.** Delegation
- B.** Planning
- C.** Control
- D.** Organization
- E.** Motivation

47. To reduce business risks, the director of a pharmaceutical company has decided to withdraw a part of the profits and invest money into the restaurant business. Name the phenomenon, when the effort and capital are divided and invested into different types of business, the results of which are not directly related.

- A.** Diversification
- B.** Insurance
- C.** Bankruptcy
- D.** Liquidation
- E.** Indexation

48. To increase its sales, a pharmacy introduced a discount system. According to this system, if a customer buys 100 UAH worth of medical products, this customer receives a 2% discount. What marketing communication has this pharmacy implemented?

- A.** Consumer-oriented sales promotion
- B.** Middlemen-oriented sales promotion
- C.** Personal selling
- D.** Sponsorship
- E.** Salesmen-oriented sales promotion

49. A herbal raw material was sent for analysis. The material consists of cylindrical pieces of roots of varying length, covered with a brown, longitudinally wrinkled bark. When peeled, the raw material externally varies in color from light yellow to brownish yellow and is light yellow and very fibrous on section. Its smell is faint. Its taste is sweet and slightly irritating. What herbal raw material is being analyzed in this case?

- A.** *Glycyrrhiza* roots
- B.** *Taraxacum* roots
- C.** *Berberis* roots
- D.** *Aralia mandshurica* roots
- E.** *Panax ginseng* roots

50. A pharmacy as a business has its income and expenditure operations. What business operation will result in an increase

of the amount of stocked goods?

- A. Goods receipt from a supplier
- B. Money transfer from a bank to the cash desk
- C. Debt recovery from a person accountable
- D. Issuing money to be accounted for
- E. Receipt of low-value and fast-wearing items

51. What excretory structures of a *Eucalyptus globulus* leaf accumulate the essential oil?

- A. Essential oil cavities
- B. Secretory cells
- C. Glandular spots
- D. Glandular hairs
- E. Essential oil glandules

52. A woman with type 1 diabetes mellitus has developed first signs of hypoglycemia after an insulin injection. What urgent measures should be taken in this case?

- A. Offer the patient a cup of warm sweetened tea
- B. Make a subcutaneous insulin injection
- C. Make an intramuscular injection of caffeine
- D. Make a subcutaneous adrenaline injection
- E. Give nitroglycerine sublingually

53. A 53-year-old patient diagnosed with arterial hypertension is undergoing inpatient treatment. After the examinations, the urologist diagnosed the patient with a prostate adenoma. What can be the drug of choice in this case?

- A. Doxazosin
- B. Verapamil
- C. Propranolol
- D. Enalapril
- E. Bisoprolol

54. What parameter must be measured during the standardization of suppositories with hydrophilic bases?

- A. Dissolution time
- B. Dry residue
- C. Boiling point
- D. Resuspension
- E. Mechanical strength

55. What stage is not a part of powder manufacturing?

- A. Granulation
- B. Mixing
- C. Sifting
- D. Comminution
- E. Packing

56. A pharmaceutical factory produces medicinal syrups. What substances ensure the microbial stability of this dosage form?

- A. Preservatives
- B. Thickeners
- C. Solubilizers
- D. Emulsifiers
- E. Pectic materials

57. How is profitability calculated?

- A. Ratio of the sum of profits to the sum of goods turnover·100%
- B. Ratio of the sum of profits to the sum of expenses·100%
- C. Ratio of the sum of profits to the total cost of fixed assets·100%
- D. Ratio of the sum of profits to the sum of cost price of the goods·100%
- E. —

58. What is the drug of choice for treatment of arterial hypertension during pregnancy?

- A. Methyldopa
- B. Furosemide
- C. Amlodipine
- D. Captopril
- E. Propranolol

59. For the treatment of cystitis, the doctor prescribed the patient a herbal drug. This drug is used in cases of acute and chronic infectious diseases of the kidneys and bladder. What herbal raw material that contains iridoids and xanthones is a component of this drug?

- A. *Centaureum* grass
- B. *Equisetum arvense* grass
- C. *Centaurea cyanus* flowers
- D. Birch leaves
- E. *Vaccinium vitis-idaea* leaves

60. Bioactive substances of this plant have a 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*

61. A doctor has written the following prescription for the preparation of a dosage form:

Rp.: Unguenti Benzylpenicillini-natrii 10.0
Misce. Da. Signa: Apply under the eyelid
3 times a day

What base should be used to make this ointment?

- A.** A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (6:4)
- B.** A mixture of paraffin and sunflower oil (3:7)
- C.** A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (7:3)
- D.** 10.0 of vaseline (petroleum jelly) "for eye ointments"
- E.** A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (5:5)

62. *Passiflora incarnata* grass contains a complex of indole alkaloids. What pharmacological group do *Passiflora* preparations belong to?

- A.** Sedatives
- B.** Antibacterial agents
- C.** Diuretics
- D.** Laxatives
- E.** Wound healing agents

63. Phospholipids are used in medicine in production of hepatoprotectors. What oil is a source of phospholipids?

- A.** *Oleum Sojae*
- B.** *Oleum Ricini*
- C.** *Oleum Lini*
- D.** *Oleum Cucurbitae*
- E.** *Oleum Amygdalarum*

64. Soft gelatin capsules with an elongated neck are called:

- A.** Tubatines
- B.** Microcapsules
- C.** Spansules
- D.** Medules
- E.** Rectal capsules

65. What is the rational method of introducing magnesium oxide into an oil emulsion?

- A.** Introduction as a suspension into the prepared emulsion
- B.** Dissolution in oil
- C.** Dissolution in water to prepare the primary emulsion
- D.** Comminution with the water intended for the dilution of the primary emulsion
- E.** Dissolution in the prepared emulsion

66. A woman came to a doctor with complaints of heartburn. She has been taking diclofenac sodium for a long time due to diagnosed rheumatoid arthritis. What medicine can the doctor prescribe for the prevention of gastropathy?

- A.** Omeprazole
- B.** Papaverine hydrochloride
- C.** Clarithromycin
- D.** Metoclopramide
- E.** Acetylsalicylic acid

67. A 44-year-old patient was diagnosed with chronic hyperacid gastritis. What pharmacological group of drugs would be most advisable in this case?

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

68. A pharmaceutical company plans to start selling its products abroad by transferring them into the ownership of a foreign reseller. What type of entry into a foreign market is it?

- A.** Export
- B.** Direct investments
- C.** Joint venture
- D.** Licensing
- E.** Franchising

69. There are several indirect taxes in the Ukrainian taxation system. What indirect tax is paid by the consumer as a surcharge to the value of goods?

- A.** Excise tax
- B.** Individual income tax
- C.** Income tax
- D.** Commercial patent
- E.** Single tax

70. What group of ointment bases vaseline (petroleum jelly) belongs to?

- A.** Hydrophobic bases
- B.** Adsorption bases
- C.** Hydrophilic bases
- D.** Silicone bases
- E.** Diphylic (amphiphilic) emulsion bases

71. How long can vasoconstrictors be used for symptomatic treatment of rhinitis?

- A.** 5–7 days
- B.** 3 weeks
- C.** 2 weeks
- D.** 5 weeks
- E.** 1 month

72. The substances and their salts that can be used in manufacturing and purification of narcotic and psychotropic substances must be accounted at the pharmacy as:

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

73. The tablet workshop at a pharmaceutical factory manufactures tablets adding adjuvants into the tablet mass. What substances belong to taste correctors?

- A.** Sugar, glucose, essential oils, menthol, fruit juice concentrates, indigo carmine, iron oxide, mannitol
- B.** Stearic acid, calcium and magnesium stearate, starch, talcum
- C.** Purified water, starch glue, sugar syrup, gelatin, carboxymethylcellulose solution
- D.** Starch, glucose, kaolinite, magnesium oxide, sodium bicarbonate
- E.** Methylcellulose, polyvinylpyrrolidone, acetylphthalylcellulose

74. For targeted delivery of medicinal substances, a special dosage form is used. It is formed by a double lipid layer with the cavities, within which the formation sphere is located. What is the name of this dosage form?

- A.** Liposome
- B.** Matrix tablet
- C.** OROS tablet
- D.** Transdermal therapeutic system
- E.** Infusion therapeutic system

75. A patient with ischemic heart disease after physical exertion felt sharp pain in the cardiac area. What drug can be prescribed in this case for quick relief of the pain syndrome?

- A.** Nitroglycerine
- B.** Captopril
- C.** Prazosin
- D.** Corglycon (convallatoxin)
- E.** Enalapril

76. What device is used to disperse medicinal substances and homogenize oi-

ntments?

- A.** Three-roll ointment mill
- B.** Disintegrator
- C.** Dismembrator
- D.** Excelsior
- E.** Double-slide tablet press machine

77. At the phytochemical workshop, percolation method is used to produce *Crataegus* tincture. What percolation rate is necessary for this purpose?

- A.** 1/24 or 1/48 part of the percolator's working volume per hour
- B.** 1/30 of the percolator's volume per 30 minutes
- C.** 1/20 of the percolator's volume per hour
- D.** 1/10 of the percolator's volume per 20 minutes
- E.** 1/40 of the percolator's volume per hour

78. A lactone test was conducted to verify the authenticity of *Melilotus* grass. What group of compounds can be detected using this test?

- A.** Coumarins
- B.** Saponins
- C.** Cardiac glycosides
- D.** Lignans
- E.** Anthracene derivatives

79. A 65-year-old man with community-acquired pneumonia was prescribed antibiotic amikacin. It should be kept in mind, that amikacin has the following side-effect:

- A.** Ototoxicity
- B.** Red coloring of urine
- C.** Vomiting
- D.** Increased blood pressure
- E.** Decreased blood pressure

80. A patient diagnosed with hypertension and bronchial asthma had a bronchospasm attack, while undergoing therapy. What drug has most likely caused this complication?

- A.** Propranolol
- B.** Amlodipine
- C.** Fenoterol
- D.** Nitroglycerin
- E.** Verapamil

81. A pharmacist prepares a mixture that according to the prescription must contain ammonia spirit-anise spirit drops. What type of a disperse system will form as a result?

- A. Opalescent mixture
- B. True solution
- C. Colloidal solution
- D. Emulsion
- E. High-molecular compound solution

82. During the two years of working in his position, the pharmacist proved to be a responsible and efficient specialist. The pharmacy's head manager appointed him to the position of the head of the Extemporaneous Compounding Department. What is this type of personnel movement called?

- A. Helical (vertical) rotation
- B. Spiral (horizontal) rotation
- C. Mixed rotation
- D. Recruitment
- E. Employee turnover

83. What should be the disintegration time for effervescent tablets according to the requirements of the State Pharmacopoeia of Ukraine?

- A. 5 minutes
- B. 3 minutes
- C. 15 minutes
- D. 30 minutes
- E. 60 minutes

84. What tincture is industrially manufactured at the ratio of 1:2?

- A. *Styphnolobium japonicum*
- B. *Hypericum*
- C. *Atropa belladonna*
- D. *Leonurus*
- E. *Mentha*

85. What medicine can be used to relieve muscle pain in a 10-year-old patient?

- A. Ibuprofen
- B. Naproxen
- C. Diclofenac
- D. Nimesulide
- E. Acetylsalicylic acid

86. A pharmaceutical company uses the Boston Consulting Group matrix to analyze the state of its strategic business units (drugs). What is the BCG Matrix based on?

- A. Market share and market growth rate
- B. Attractiveness of the industry
- C. Market segments
- D. Competitive Intensity
- E. Business opportunities

87. A doctor prescribed the drug simvastatin to the patient to correct hyperli-

pidemia. Why should the selected daily dose be taken once in the evening?

- A. Cholesterol biosynthesis occurs mainly at night
- B. Absorption of the drug increases at night
- C. Receptor sensitivity to low-density lipoproteins increases
- D. Risk of myopathy decreases
- E. Catabolism rate of low-density lipoproteins increases

88. According to the requirements of the State Pharmacopoeia of Ukraine, thin-layer chromatography is a mandatory method of identification of herbal raw materials. What zones must be detected on a chromatographic plate during the analysis of *Digitalis purpurea* herbal raw material?

- A. Purpurea glycosides A and B
- B. Lanatosides A and B
- C. K-Strophanthin
- D. Convallatoxin
- E. Atropine and hyoscyamine

89. When dispensing an iron supplement to be taken orally, the pharmacist must warn the patient that this preparation should not be taken with milk or dairy products. What might happen otherwise, if the patient is not warned?

- A. Formation of poorly soluble chelate complexes
- B. Prolongation of the effect of iron preparations
- C. Increased activity of the drug
- D. Faster absorption of the drug
- E. Accelerated elimination of the drug

90. What is the minimum amount of boric acid that can be weighed on the BP-1 hand scales?

- A. 0.02 g
- B. 0.01 g
- C. 0.03 g
- D. 0.04 g
- E. 0.05 g

91. There are several formal and informal groups among the pharmaceutical company's employees. What feature is characteristic of formal groups?

- A. They are created to implement the production process
- B. They form spontaneously
- C. They resist changes in the organization
- D. They form as a result of interest, sympathy
- E. The group leader receives authority from the group

92. There are different grades and types of glass based on their quality, quantitative composition, and properties. What type of glass belongs to the first-grade?

- A. USP-1
- B. AB-1 (non-boric glass)
- C. NS-2 (neutral glass 2)
- D. NS-2 A (neutral glass 2A)
- E. MTB (colorless glass for medical containers)

93. In its work, a pharmaceutical company combines ensuring its own profitability with meeting the needs of consumers and raising the standard of living in the society. What marketing management concept has the company chosen?

- A. Socio-ethical marketing
- B. Product improvement
- C. Intensification of commercial efforts
- D. Marketing
- E. Production improvement

94. A marketer of a pharmaceutical enterprise uses primary and secondary marketing information for market analysis. What information is considered to be primary?

- A. Collected for the first time for a specific purpose
- B. Published in statistical reference books
- C. Obtained from publications in scientific magazines
- D. Published in the company's annual report
- E. Published in mass media

95. At the exhibition, calendars, notebooks, and business gifts with the logo of a pharmaceutical company were handed out to the exhibition visitors for free. What is this type of advertising called?

- A. Souvenir advertising
- B. Print advertising
- C. Point-of-sale advertising
- D. Out-of-home advertising
- E. Film advertising

96. For what substance its dosing is based on the mass, when preparing liquid dosage forms?

- A. 30% hydrogen peroxide (Perhydrol)
- B. Ammonia spirit-anise spirit drops
- C. 1% citral alcohol solution
- D. *Leonurus* tincture
- E. *Elixir pectoralis*

97. Adhesive bandages have an effect on the skin, subcutaneous tissue, and in some cases on the entire body. What bandage is manufactured with the saponification reaction occurring in the process?

- A. Simple lead bandage
- B. Pepper plaster bandage
- C. Callus treatment bandage
- D. Adhesive bandage
- E. Bactericidal adhesive bandage

98. A 52-year-old patient, who takes heparin, developed signs of the drug overdose. What antidote should be used in this case?

- A. Protamine sulfate
- B. Unithiol
- C. Acetylcysteine
- D. Potassium chloride
- E. Naloxone

99. The duty of a cash desk operator is to perform cash receipt and withdrawal transactions on the grounds of the relevant cash orders. Select from the list below a receipt transaction.

- A. Receipt of funds for advance salary payments
- B. Issuing a cash sum to be accounted for
- C. Withdrawing sales proceeds for the transfer to the current account
- D. Payment for the goods purchased for the business needs
- E. Salary payments

100. Accounts are classified based on the type of accounting of assets or the sources of their formation. What is accounted in passive accounts?

- A. Authorized capital
- B. Accounts receivable
- C. Monetary funds
- D. Fixed assets
- E. Goods

101. A patient with arterial hypertension has been taking a β -blocker (bisoprolol) for a long time. After his condition improved, he suddenly stopped taking this drug, which caused a sharp increase in the blood pressure. What complication of the therapy has occurred in this case?

- A. Withdrawal syndrome
- B. Reduced sensitivity
- C. Dysbacteriosis
- D. Bronchospasm
- E. Bradycardia

102. The calculation of isotonic concentration using the cryoscopic method is based on the following law:

- A. Raoult's law
- B. Dalton's law
- C. Clapeyron-Mendeleev equation
- D. Boyle-Mariotte law
- E. —

103. *Brassica juncea* seeds are the raw material for the production of drugs with a distracting and warming effect. What class of bioactive substances causes such effect of the drugs?

- A. Thioglycosides
- B. Fatty oil
- C. Alkaloids
- D. Flavonoids
- E. Polysaccharides

104. *Veratrum* water is used as an anti-parasitic agent and is very toxic, which is why it can be used only externally. What class of bioactive substances causes this effect?

- A. Alkaloids
- B. Thioglycosides
- C. Fatty oils
- D. Steroidal saponins
- E. Cardiac glycosides

105. What is the mandatory component of medical product advertising for end users, according to the law of Ukraine "On Advertising"?

- A. Warning that self-medication can be harmful to health
- B. Comparison with other medical products
- C. Reference to the drug as the most effective
- D. References to the cases of successful drug use
- E. Naming and mentioning celebrities, movie and cartoon characters, competent authorities

106. The management of a pharmaceutical company uses F. Herzberg's two-factor theory of motivation. What is this theory based on?

- A. Hygienic and motivational factors
- B. The need for safety
- C. The need for power, success, and affiliation
- D. The need for protection
- E. The need for existence, connection, growth

107. During the microscopy of a herbal raw material, the pharmacist noted its main diagnostic features: calcium oxalate druses in the mesophyll of the leaf and along the veins, simple unicellular hairs, covering stellate hairs with 4–8 thick-walled, porous and often lignified rays at their base, idioblast cells with slime. What herbal raw material can be characterized by the listed diagnostic features?

- A. *Althaea officinalis herba*
- B. *Urtica dioica folium*
- C. *Gnaphalium uliginosum herba*
- D. *Digitalis purpurea folium*
- E. *Hyoscyamus niger folium*

108. The medicines that contain anthracene derivatives are used as laxatives. What medicinal plant contains this group of bioactive substances?

- A. *Frangula alnus*
- B. *Eucalyptus globulus*
- C. *Calendula officinalis*
- D. *Bidens tripartita*
- E. *Salvia officinalis*

109. A pharmacist prepared a 5% glucose solution and added 5 mL of Weibel's stabilizer. What is the volume of the prepared solution?

- A. 100 mL
- B. 50 mL
- C. 300 mL
- D. 500 mL
- E. 1000 mL

110. A 12-year-old girl has been diagnosed with acute pyelonephritis. What anti-bacterial agent has an age limit for its prescription to a patient?

- A. Levofloxacin
- B. Cefuroxime
- C. Clarithromycin
- D. Benzylpenicillin sodium salt
- E. Amoxicillin

111. A patient with arterial hypertension was prescribed enalapril, but after two weeks of treatment, taking this drug at the dose of 10 mg twice a day, the patient developed a dry non-productive cough. What is the likely cause of this side effect?

- A. Accumulation of residual bradykinin in the blood
- B. Exacerbation of chronic bronchitis
- C. Inhibition of histamine synthesis
- D. Gastroesophageal reflux
- E. Increased tone of the cough center

112. What medicine is simultaneously a mucolytic and an antidote against a paracetamol overdose?

- A. Acetylcysteine
- B. Bromhexine
- C. Ambroxol
- D. Trypsin
- E. Carbocysteine

113. What nonsteroidal anti-inflammatory drug is the most hematotoxic and can cause agranulocytosis?

- A. Metamizole sodium
- B. Nimesulide
- C. Indomethacin
- D. Ibuprofen
- E. Acetylsalicylic acid

114. What packaging should the pharmacist use for a baby powder?

- A. Container with a lid that has holes in it
- B. Ordinary paper capsules
- C. Parchment
- D. Wax paper
- E. Gelatin capsules

115. What group of drugs can be characterized by a side effect, where the color perception of surrounding objects is distorted, making everything yellow-green tinted?

- A. Cardiac glycosides
- B. Inhaled glucocorticoids
- C. Mucolytics
- D. Antibiotics
- E. Nonsteroidal anti-inflammatory drugs

116. When preparing compound powders, a pharmacist used the "three-layer" method. Which one of the listed substances is a dye?

- A. Ethacridine lactate
- B. Camphor
- C. Streptocide (Sulfanilamide)
- D. Sulfur
- E. Protargol

117. What amount of furacilin should a pharmacist measure out for the preparation of 250 mL of a furacilin solution (1:5000)?

- A. 0.05 g
- B. 0.5 g
- C. 5.0 g
- D. 0.025 g
- E. 0.25 g

118. A decoction of *Bidens* grass has an anti-allergic effect and is often used in pediatrics. What species of this plant is pharmacopoeial?

- A. *Bidens tripartita*
- B. *Bidens cernua*
- C. *Bidens radiata*
- D. *Bidens frondosa*
- E. *Bidens aurea*

119. A man came to a pharmacist and asked to recommend him a herbal tonic and adaptogen. What herbal raw material has such a pharmacological effect?

- A. *Schisandra* seeds
- B. *Silybum* fruits
- C. Pumpkin seeds
- D. Flax seeds
- E. Fennel fruits

120. A 50-year-old woman complains of headache, dizziness, visual snow, and nausea. The skin of her face is hyperemic. Objectively, her heart rate is 85/min., her blood pressure is 210/120 mm Hg. What is the provisional diagnosis in this case?

- A. Hypertensive crisis
- B. Angina pectoris attack
- C. Hemorrhagic stroke
- D. Myocardial infarction
- E. Meningococcal infection

121. When analyzing the activity of the pharmacy, the pharmacy's head manager performed the following calculations: the manager subtracted the cost price of the sold goods from the proceeds from the sales of goods at retail prices. What indicator was calculated by the pharmacy's head manager?

- A. Markups
- B. Profitability
- C. Commodity circulation
- D. Expenses
- E. Profit

122. What is the duration of the leave due to pregnancy and childbirth?

- A. 126 calendar days
- B. 70 working days
- C. 56 calendar days
- D. 59 working days
- E. 90 calendar days

123. What quality parameter must be additionally controlled during the industrial production of suspension eye drops?

- A. Particle size
- B. Transparency
- C. Color
- D. Sterility
- E. Quantitative determination

124. On the initiative and with support of the manufacturing company, free samples of adhesive bandages were handed out to the visitors at a pharmacy. What element of the marketing communications complex is it?

- A. Sales promotion, sampling
- B. Public relations
- C. Lobbying
- D. Personal selling
- E. Advertising

125. A pharmaceutical company makes medical products, special nutrient supplements, and medical cosmetics. What type of business activity is it?

- A. Manufacturing activity
- B. Commercial activity
- C. Financial activity
- D. Financial and credit activity
- E. —

126. The addition of preservatives and stabilizers is prohibited, when making the following dosage forms:

- A. Dosage forms for newborns
- B. Suspensions
- C. Emulsions
- D. Ophthalmic dosage forms
- E. Infusions

127. At the end of a working day, a cashier prepares the sales proceeds received in cash for the transfer to the bank account through a collecting agent. What document must be issued by the cashier for the cash transfer in this case?

- A. Payment summary
- B. Cheque payable
- C. Cash cheque
- D. Payment order
- E. Payment request and order

128. What is the fundamental difference of the Japanese management model?

- A. Collectivism
- B. Individualism
- C. Strictly formalized management system
- D. Strict control procedure
- E. Focus on individual results

129. What oral hypoglycemic agent should be prescribed for a 47-year-old overweight patient with type 2 diabetes mellitus, if diet therapy is ineffective?

- A. Metformin
- B. Metronidazole
- C. Meloxicam
- D. Metoprolol
- E. Metoclopramide

130. A pharmaceutical company provides its employees with free lunches. What needs does it try to satisfy according to the Maslow's theory of motivation?

- A. Physiological
- B. Safety and protection
- C. Involvement in the events
- D. Esteem
- E. Self-actualisation

131. On the occasion of the Pharmaceutical Worker Day in Ukraine, the best employees at a pharmacy were awarded the Letters of Commendation. What type of management methods was used in this case?

- A. Socio-psychological
- B. Technological
- C. Economic
- D. Administrative
- E. —

132. A pharmacy dispenses medical products, the cost of which must be reimbursed based on electronic prescriptions. What authority reimburses the pharmacy for the cost of dispensed drugs?

- A. National Health Service of Ukraine
- B. State Service of Ukraine on Medicines and Drugs Control
- C. State Expert Center of the Ministry of Health of Ukraine
- D. State Fiscal Service of Ukraine
- E. Ministry of Labor and Social Policy of Ukraine

133. If a pharmacy plans to temporarily close for repairs or re-equipment, the State Service of Ukraine on Medicines and Drugs Control must be notified in advance no later than:

- A. 10 working days before the closure
- B. 20 working days before the closure
- C. 1 month before the closure
- D. Notification is optional
- E. 3 months before the closure

134. What is the amount of the value added tax (VAT) on the medical products sold by a pharmacy.

- A. 7%
- B. 10%
- C. 15%
- D. 25%
- E. 5%

135. What type of tax is the Individual Income Tax?

- A. Nationwide, direct
- B. Nationwide, indirect
- C. Local, direct
- D. Local, indirect
- E. Special

136. Iridoids can be divided into four main groups. What is the common name for the iridoids obtained from the *Valerianaceae* family plants?

- A. Valepotriates
- B. Cyclopentane iridoids
- C. Secoiridoids
- D. Complex iridoid alkaloids
- E. Common iridoids

137. To determine the authenticity of a herbal raw material, several drops of an alcoholic solution of α -naphthol and concentrated sulfuric acid were applied to the root section of *Cichorium intybus*. It resulted in a pink-violet coloring that indicates the presence of the following in the herbal raw material:

- A. Inulin
- B. Pectin
- C. Slime
- D. Essential oils
- E. Fatty oils

138. A 58-year-old patient with persistent bronchial asthma receives long-term inhalation therapy. Within a week, symptoms of candidiasis appeared in her oral cavity. What medicines could have caused this side effect?

- A. Inhaled glucocorticosteroids
- B. Inhaled muscarinic antagonists
- C. Inhaled β_2 -adrenergic agonists
- D. Herbal antiseptics
- E. Mucolytics

139. What minimum amount of a toxic

substance can be weighed on one-gram hand scales?

- A. 0.05 g
- B. 0.02 g
- C. 0.04 g
- D. 0.1 g
- E. 0.03 g

140. Who gives permission to distribute medical products between the structural divisions of a pharmacy, after these products have successfully passed the on-receipt inspection?

- A. Authorized person
- B. Pharmacist on duty
- C. Supplier representative
- D. Accountant
- E. Lawyer

141. What document must be added to the foreign-made medical products?

- A. Conclusion on the quality of the drug imported into Ukraine
- B. Technical regulations for the drug
- C. Drug Quality Standard
- D. Written Control Passport
- E. Extract from the State Register of Medicines

142. Dried *Vaccinium* berries can be used as an astringent. The astringent properties of this herbal raw material are caused by the presence of certain substances. Name these substances.

- A. Tannins
- B. Polysaccharides
- C. Flavonoids
- D. Alkaloids
- E. Iridoids

143. The drug sanguiritrin contains a combination of alkaloid bisulfates — sanguinarine and chelerythrine — that have an antimicrobial effect against Gram-positive bacteria and exhibit an antitrichomonal effect. What plant is the source of these alkaloids?

- A. *Macleaya cordata*
- B. *Glaucium flavum*
- C. *Chelidonium majus*
- D. *Passiflora incarnata*
- E. *Vinca minor*

144. A pharmacist has prepared an ascorbic acid solution for injections. What substance must be used for the solution stabilization in this case?

- A. Sodium sulfite
- B. Sodium chloride
- C. Sodium bromide
- D. Sodium acetate
- E. Sodium citrate

145. A pharmaceutical company organizes scientific conferences and workshops for doctors and pharmaceutical workers. What element of marketing communications is used by this pharmaceutical company?

- A. Public relations
- B. Sales promotion
- C. Personal selling
- D. Merchandising
- E. Direct marketing

146. Mandatory payroll deductions are withheld from the salary of pharmacy workers. What is the tax rate on income of natural persons?

- A. 18%
- B. 15%
- C. 20%
- D. 0%
- E. 5%

147. How long should the pharmacy keep a receipt for Morphin-ZN tablets, package №50?

- A. Five years, not counting the current one
- B. Three years, not counting the current one
- C. One year, not counting the current one
- D. The receipt form need not be kept by the pharmacy
- E. One month, not counting the current one

148. What is the minimum permissible total area of a pharmaceutical sales point, according to the current Licensing Requirements?

- A. No less than 18 m²
- B. No less than 50 m²
- C. No less than 30 m²
- D. No less than 40 m²
- E. No less than 250 m²

149. During stock-taking at a pharmacy, a surplus of material goods was discovered. What should the inventory committee do with the discovered surplus?

- A. Recording as received
- B. Confiscation
- C. Elimination
- D. Conducting an official investigation
- E. Writing off

150. What mixing method is carried out by repeatedly pumping the liquid through the apparatus, using a pump or nozzles?

- A. Circulation
- B. Mechanical
- C. Pneumatic
- D. Acoustic
- E. Ultrasonic