

1. During identification of a medicinal substance, a chloroform layer colors yellow-orange after addition of a solution of chloramine and hydrochloric acid. Name this substance:

- a. Sodium chloride
- b. Sodium bromide**
- c. Sodium fluoride
- d. Potassium iodide
- e. Potassium fluoride

2. Because of dissatisfaction with working conditions, a dispensing chemist has resigned of his own free will from the pharmacy and found a job as a medical representative of a pharmaceutical company. Such movement of the personnel corresponds with the following concept:

- a. Staff turnover**
- b. -
- c. Recruitment
- d. Promotion
- e. Staff rotation

3. 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. Prescription form f-1
- b. Two copies of prescription form f-3
- c. Two copies of prescription form f-1
- d. Prescription form f-3

e. Two prescription forms f-1 and f-3

4. A pharmaceutical manufacturer forms marketing teams responsible for a particular product or a group of products (medicines). What model of marketing organization does the company use in this case?

- a. Regional marketing
- b. Functional marketing
- c. Product-based marketing**
- d. Segment marketing
- e. Combined marketing (matrix model)

5. A manager of a wholesale pharmaceutical company is responsible for relaying various tasks to the employees and supervises the fulfillment of assigned tasks. What management level corresponds with these duties?

- a. Technical**
- b. Middle-level
- c. Top-level
- d. Administrative
- e. Institutional

6. To identify a drug, an analytical chemist of the State Inspectorate for Drug Quality Control performs a reaction with ninhydrin solution. Specify the drug being identified:

- a. Cortisone acetate
- b. Ascorbic acid

c. Methionine

- d. Paracetamol
- e. Streptocide

7. An analytical pharmacist analyzes the antianginal agent glyceryl trinitrate (nitroglycerin). What solution would the pharmacist use to identify the nitrate ions that form after hydrolysis?

- a. Diphenylamine solution**
- b. Thiourea solution
- c. Lanthanum(III) nitrate solution
- d. Chloramine solution
- e. Glyoxal-hydroxyanil solution

8. An analytical pharmacist uses a reaction with a sodium hydroxide solution during boiling to identify a nicotinamide substance. What gaseous product is released as a result of this reaction?

- a. Sulfur(VI) oxide
- b. Carbon(IV) oxide
- c. Hydrogen sulfide
- d. Formaldehyde

e. Ammonia

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

- a. OROS tablet
- b. Pearl

c. Spansule

- d. Tubatine
- e. Microcapsule

10. When preparing dermatological ointments the following substance should be introduced by suspending:

- a. Menthol

b. Xeroform

- c. Camphor
- d. Protargol (silver proteinate)
- e. Ephedrine hydrochloride

11. Oblong tablets are called:

- a. Capsules

b. Caplets

- c. Pellets
- d. Dragee
- e. Forte tablets

12. Adrenergic drug adrenaline tartrate contains phenolic hydroxyls in its structure. What solution should be used to conduct a reaction for their detection?

- a. Sodium nitrate solution
- b. Copper (II) sulfate solution
- c. Magnesium sulfate solution

d. Iron (III) chloride solution

- e. Potassium bromide solution

13. A 3-year-old child is intolerant to paracetamol. What antipyretic drug can be taken instead?

- a. Acetylsalicylic acid
- b. Diclofenac sodium
- c. Naproxen

d. Ibuprofen

- e. Nimesulide

14. What pathological condition can develop during a long-term treatment with prednisolone?

a. Gastrointestinal bleeding

- b. Salivation
- c. Myocarditis
- d. Pyelonephritis
- e. Pneumonia

15. The analytical laboratory received calcium chloride. What volumetric solution should be used for quantitative determination of this medicinal substance?

- a. Hydrochloric acid
- b. Potassium bromate

c. Sodium edetate

- d. Potassium permanganate

e. Sodium hydroxide

16. The method of preparing suspensions depends on the properties of the component substances. What substances have hydrophobic properties?

- a. Zinc oxide, talcum
- b. Sodium bicarbonate, sodium sulfate
- c. Boric acid, calcium carbonate
- d. Bolus alba (kaolin), bentonite

e. Camphor, menthol

17. A dispensing chemist identifies metronidazole substance after reduction of the nitro group into an aromatic amino group. The dispensing chemist uses a reaction that produces the following:

- a. Indophenol dye
- b. Azomethine dye

c. Azo dye

- d. Iron(III) hydroxamate
- e. Aurine dye

18. A pharmacist prepares a chamomile flowers infusion. Specify the proportion of raw material to infusion:

a. 1:10

- b. 1:50
- c. 1:400
- d. 1:20
- e. 1:30

19. The head manager of a pharmacy has decided to apply various management methods as a means of influencing separate employees and the staff as a whole. What management methods can be classified as psychosocial?

a. Plan for improvement of the working conditions at the pharmaceutical facility

- b. The process of distribution of duties between the technical level managers
- c. Material stimuli that include salary rates, extra pay, increments, bonuses, etc.
- d. -
- e. The process of salary calculation for the sales department employees

20. What five-membered heterocycle is the basis of the structural formula of antiprotozoal and antibacterial drug metronidazole?

- a. Pyrrole
- b. Pyrazole
- c. Thiazole

d. Imidazole

e. Furan

21. A pharmacy has received a prescription written on an F-3 form. The dispensing chemist, tasked with the incoming control of the prescription, noted that it was missing certain mandatory details. Such prescription forms must always have the following:

- a. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility
- b. Signature of the head manager of the medical facility or signature of the deputy head manager for medical work

c. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility, seal of the medical facility

- d. Doctor's personal seal and signature
- e. Medical facility stamp, signature of the head manager of the medical facility, seal of the medical facility

22. A patient is 20 years old. After she was stung by a bee the patient developed Quincke's disease; rash in the form of blisters and papulae appeared on her torso. First aid in this case should start with administering the following drug:

- a. Fresh frozen plasma
- b. Rheopolyglukin (Dextran)
- c. Haemodes
- d. Prednisolone**
- e. Penicillin

23. What pharmacy department carries out the individual production of extemporaneous medicines, their quality control, and their dispensing to consumers?

- a. Over-the-counter sales
- b. Stock of goods
- c. Prescription and production**
- d. Medical cosmetics
- e. Ready-made dosage forms

24. An analytical chemist analyses the substance of racemic menthol according to the State Pharmacopoeia of Ukraine. To identify the drug and determine its purity he uses optical rotation that should occur within the interval:

- a. From $+0,2^{\circ}$ to $-0,2^{\circ}$**
- b. From -48° to -51°
- c. From $+10^{\circ}$ to $+13^{\circ}$
- d. From -102° to -105°
- e. From $+50^{\circ}$ to $+56^{\circ}$

25. A pharmacist prepares fat-based suppositories by pouring. Specify the type of fatty vehicle in this case:

- a. Spermaceti
- b. Vaseline (petroleum jelly)
- c. Butyrol**
- d. Wax
- e. Cocoa butter

26. Based on the results of marketing research, the CEO of a pharmaceutical company and a team of marketologists have decided to take measures toward improvement of the competitive ability of the company's medical products. This kind of decision can be characterized as:

- a. Collegial**
- b. -
- c. Personal
- d. Intuitive
- e. Autocratic

27. When developing a new medicine, marketologists of the pharmaceutical company have conducted an isolated research to determine the doctors' opinion of the medicines currently available on the market. What method of marketing research was used?

- a. Testing
- b. Panel
- c. Experiment
- d. Survey**
- e. Observation

28. Difference between the retail price of products sold and the margin determines:

- a. Margin
- b. Income
- c. Breakeven
- d. Production cost**
- e. Markup

29. 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. beta-lactam**

- b. Phenothiazine
- c. Quinoline
- d. Furan
- e. Pyridine

30. A certain injection solution cannot undergo thermal sterilization, because high temperatures lead to its hydrolysis with formation of formaldehyde and ammonia. Name this solution:

- a. Diprazine (promethazine) solution
- b. Glucose solution
- c. Novocaine (procaine) solution
- d. Hexamethylenetetramine solution**
- e. Aminazine solution

31. The head manager of the "Ecopharm" pharmacy has entrusted the deputy head manager with some of his duties. The process when an executive partially transfers the authority to perform certain tasks to his or her subordinates is called:

- a. Withdrawal of authority
- b. -
- c. Reduction of authority
- d. Delegation of authority**
- e. Dissolution of authority

32. 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. Product improvement
- b. Production improvement
- c. Socio-ethical marketing**
- d. Intensification of commercial efforts
- e. Marketing

33. Dosage precision during tablet making mainly depends on the following technological property of tablet mass:

- a. Lyophilic property
- b. Flowability**
- c. Compression ratio
- d. Compressibility
- e. Relative density

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

- a. Nitrofural (Nitrofurazone)**
- b. Nitroxoline
- c. Metronidazole
- d. Phthalazole (Phthalylsulfathiazole)
- e. Norfloxacin

35. According to the State Pharmacopoeia of Ukraine, cerimetry should be used to determine the quantitative content of paracetamol. What solution is used as a titrant in this case?

- a. Silver nitrate
- b. Potassium permanganate
- c. Iodine monochloride
- d. Hydrochloric acid
- e. Cerium sulfate**

36. A pharmacy customer complains of constricting, sometimes burning pain behind the sternum, with irradiation to the neck and left arm. The pain lasts for 5-10 minutes. What drug should be given to this customer for emergency aid?

- a. Digoxin

- b. Nifedipine
- c. Bisoprolol
- d. Isosorbide dinitrate

e. Nitroglycerine

37. Practically no microorganisms can develop in the sugar syrup, if its concentration is optimal. Why is it so?

- a. Because of high pH
- b. Because of decreased surface tension between the solution and the microbial cell
- c. Only because preservatives were added into the syrup
- d. Because of low pH

e. Because osmotic pressure in the solution is higher than in the microbial cell

38. Which of the pharmacy departments is responsible for checking the quantity and quality of received goods, their storage and dispensing to other departments?

- a. Department of curative cosmetics
- b. Department of over-the-counter drugs
- c. Department of finished dosage forms

d. Inventory department

e. Compounding and production department

39. Xycaine quantitative content can be determined by means of argentometry (back titration). What indicator is required by this method?

- a. Bromphenol blue
- b. Sodium eosinate
- c. Starch

d. Iron (III) ammonium sulphate

e. Potassium chromate

40. What is an effective way of preserving the stability of the medicinal substances that are thermolabile and have low stability?

- a. Boiling
- b. Ultraviolet radiation
- c. Hydrolysis
- d. Filtration

e. Lyophilization

41. Helichrysum arenarium herbal raw material has anti-inflammatory and choleretic effect. What parts of this plant are harvested?

- a. Fruits
- b. Grass

c. Flowers

- d. Roots
- e. Rhizomes

42. The presence of a primary aromatic amino group in sulfanilamide structure can be confirmed with a reaction that produces:

- a. Fluorescein
- b. Murexide
- c. Iodoform

d. Azo dye

e. Diazonium salts

43. The market can be characterized by the following conditions: there are many sellers and buyers, who have no influence over current prices; similar and interchangeable competing goods are available; there are no price limits. What type of market is it?

- a. Economic planning
- b. Oligopoly
- c. Pure monopoly

d. Monopolistic competition

e. Pure competition

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

a. Mentha

b. Hypericum

c. Styphnolobium japonicum

d. Atropa belladonna

e. Leonurus

45. Prescriptions for psychotropic drugs remain in the pharmacy after the sale. How long must they be kept?

a. The prescription must be returned to the patient

b. One month

c. Five years

d. Three years

e. One year

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

a. Alkaloids

b. Polysaccharides

c. Coumarins

d. Flavonoids

e. Saponins

47. What fatty oil can be used as a substitute for olive oil, when making injectable solutions?

a. Oleum Cucurbitae

b. Oleum Ricini

c. Oleum Amygdalarum

d. Oleum Maydis

e. Oleum Lini

48. A pharmacist has prepared a medicine by dissolving the active substances in the water that was acidified with hydrochloric acid solution (1:10). Such preparation technology is characteristic of:

a. Copper sulfate

b. Osarsol

c. Tannin

d. Pepsin

e. Collargol (Colloidal silver)

49. What group of antibiotics should be prescribed to treat chlamydial infection?

a. Cephalosprins

b. Carbapenems

c. Aminoglycosides

d. Macrolides

e. Penicillins

50. After the start of a treatment, a tuberculosis patient has developed red coloration of urine, saliva, and lacrimal fluid. What drug could have caused such changes in this case?

a. Isoniazid

b. Ciprofloxacin

c. Alcoholic iodine solution

d. Benzylpenicillin (Penicillin G) sodium salt

e. Rifampicin

51. What fatty oil is nondrying due to its oleic acid glyceride content?

a. Cucurbitae oleum

b. Ricini oleum

- c. Maydis oleum
- d. Lini oleum
- e. Helianthi oleum

52. A 6-year-old girl has been suffering from bronchial asthma for 3 years. To stop the attacks, the pediatrician prescribed her a short-acting beta₂-adrenomimetic. What medicine was prescribed by the doctor in this case?

- a. Tiotropium bromide
- b. Budesonide
- c. Ipratropium bromide
- d. Salbutamol**
- e. Fluticasone

53. To minimize business risks, the board of directors of a pharmaceutical company decides to expand into a market of plant protection products. Such approach to risk management is called:

- a. Insurance
- b. Intensification
- c. Integration
- d. Diversification**
- e. Consolidation

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

- a. 30 minutes
- b. 3 minutes
- c. 15 minutes
- d. 5 minutes**
- e. 60 minutes

55. Menthol has anesthetic and antiseptic effect. What plant is the source of menthol?

- a. Folia Uvae ursi
- b. Folia Menthae piperitae**
- c. Folia Absinthii
- d. Folia Salviae
- e. Folia Eucalypti

56. A process dealing with drawing the documents, their processing, circulation and storage is called records management. If all documents circulate through one organization center, - the Office Desk, - then such system of records management is called:

- a. Decentralized
- b. Mixed
- c. Centralized**
- d. Specialized
- e. Referent

57. Which of the following pricing factors of a manufacturing pharmaceutical enterprise is internal?

- a. Consumers
- b. Participants in sales channels
- c. State regulation of prices
- d. Expenses**
- e. Competitors

58. Benzoic acid is known to have antiseptic properties. To identify this acid the following should be used:

- a. $[\text{NH}_4]_2\text{C}_2\text{O}_4$
- b. K_2CrO_4
- c. KMnO_4
- d. $\text{K}_2[\text{HgI}_4]$
- e. FeCl_3**

59. A man with gastric ulcer is prescribed anti-Helicobacter pylori therapy. On the 3rd day the patient developed black coloring of feces. What had caused such changes?

a. Bismuth subcitrate

b. Tetracycline

c. Omeprazole

d. Metronidazole

e. Tinidazole

60. A pharmacy has received the following formulation: Rp.: Spiritus aethylici 20 ml Resorcini 0.2 M.D.S. Wipe the affected skin areas twice a day. endtabular What is the optimal preparation technique in this case?

a. Commminute the substance in a mortar, add the solvent

b. Measure out ethyl alcohol into a vial for dispensing, measure out salicylic acid

c. Measure out the substance into a vial for dispensing, measure out ethyl alcohol, shake the vial

d. Measure out the substance into a stand, measure out the solvent

e. Measure out the solvent into a stand, measure out the substance

61. An analyst of a chemical laboratory had received a glucose substance for analysis. To check its quality he used a polarimeter. The analyst measured:

a. Refractive index

b. Angle of rotation

c. Specific gravity

d. Optical density

e. Melting point

62. A system of indicators characterizes financial and business activity of an organization and the state of its assets and sources on the certain day in the monetary unit. Name this system:

a. Turnover balance sheet

b. Double entry

c. Business transactions log book

d. Balance sheet

e. Receipts and expenditures report

63. 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. Metronidazole

b. Metformin

c. Metoprolol

d. Metoclopramide

e. Meloxicam

64. Glucose substance was received for analysis. When heated with copper tartrate reagent (Fehling reagent), it produced a red precipitate, which indicates that its structure contains:

a. Phenolic hydroxyl

b. Alcoholic hydroxyl

c. Aldehyde group

d. Ester group

e. Amide group

65. A patient with exertional angina pectoris had been taking isosorbide mononitrate orally for 2 months, when this drug lost its effectiveness. What is the likely cause of isosorbide mononitrate being no longer effective in this case?

a. Psychological dependence

b. Tolerance

c. Physical dependence

d. Cumulation

e. Sensitization

66. 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. State Expert Center of the Ministry of Health of Ukraine
- b. State Fiscal Service of Ukraine
- c. State Service of Ukraine on Medicines and Drugs Control
- d. National Health Service of Ukraine**
- e. Ministry of Labor and Social Policy of Ukraine

67. What medicinal substance has an imidazole fragment in its structure?

- a. Thiamine bromide
- b. Nitrofurazone
- c. Nicotinic acid
- d. Phenazone
- e. Pilocarpine hydrochloride**

68. A pharmaceutical factory produces soft dosage forms. What soft dosage form melts at the body temperature?

- a. Paste
- b. Ointment
- c. Cream
- d. Liniment**
- e. Gel

69. What tablet coating protects stomach from harmful influence of active ingredients?

- a. Intestinally absorbed**
- b. Gastrically absorbed
- c. Fat-soluble
- d. Water-soluble
- e. -

70. What medicinal substance is a derivative of morphinan?

- a. Codeine**
- b. Pachycarpine hydroiodide
- c. Quinine sulfate
- d. Caffeine
- e. Cocaine hydrochloride

71. To increase the tone and specific rhythmic activity of the uterus, a certain ergot alkaloids-based herbal drug is used. Name this drug:

- a. Ergotamine hydrotartrate**
- b. Codeine phosphate
- c. Papaverine hydrochloride
- d. Morphine hydrochloride
- e. Atropine sulfate

72. According to the State Pharmacopoeia of Ukraine, an analytical chemist can determine sulfate admixtures in sodium tetraborate by the effect of white opalescence that results from its reaction with the following solution:

- a. Silver nitrate
- b. Ammonium oxalate
- c. Magnesium sulfate
- d. Barium chloride**
- e. Sodium sulfide

73. An expert from an analytical quality control laboratory performs the quantitative determination of chlorpromazine in the tablets, according to the State Pharmacopoeia of Ukraine. The expert uses the method of ultraviolet spectrophotometry and measures the following with the spectrophotometer:

- a. Solution pH
- b. Optical density**
- c. Viscosity

- d. Angle of rotation
- e. Refractive index

74. A 68-year-old man has been prescribed a hypolipidemic agent as a part of his combination therapy for ischemic heart disease. Name this drug:

- a. Nifedipine
- b. Nitroglycerine
- c. Hydrochlorothiazide
- d. Atorvastatin**
- e. Lisinopril

75. Incoming medicines inspection is performed by an authorized employee. What is textbfNOT a part of the responsibilities of this person?

- a. -
- b. To draw up orders for medicines and medical products, to conclude sales contracts**
- c. To check the pharmacy stock for low-quality or fake medicines
- d. To draw up conclusions regarding inspection of incoming medicines
- e. To keep a roster of incoming medicines

76. The extemporaneous compounding department of a pharmacy prepares eye drops. Which one of the listed substances is a preservative?

- a. Methyl cellulose
- b. Polyvinyl alcohol
- c. Acetate buffer
- d. Sodium chloride
- e. Benzalkonium chloride**

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

- a. 70 working days
- b. 126 calendar days**
- c. 59 working days
- d. 56 calendar days
- e. 90 calendar days

78. A 43-year-old patient was delivered to an admission room with renal colic attack. What group of drugs would be the most effective during the attack?

- a. Antacids
- b. Antibiotics
- c. Hepatoprotectors
- d. Cholagogues
- e. Antispasmodics**

79. A pharmaceutical company plans to start selling its products abroad by transferring them into the ownership of a foreign reseller. This company will enter the foreign market by means of:

- a. Export**
- b. Licensing
- c. Joint venture
- d. Franchise
- e. Direct investments

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

- a. Potassium chloride
- b. Acetylcysteine
- c. Naloxone
- d. Unithiol
- e. Protamine sulfate**

81. What technology should be chosen by a pharmacist to make a liquid dosage form, if it contains

calcium gluconate?

a. Dissolve it in hot solvent or heat it up to full dissolution

b. Add equal amount of sodium chloride

c. Dissolve in alkaline medium

d. First grind it into powder when it is dry or with small amount of solvent added

e. Dissolve in the water free of redox substances

82. A pharmacist uses Vitepsol to prepare rectal suppositories. What fluid should be used in this case to lubricate the suppository form?

a. Ethyl alcohol

b. Spiritus saponatus

c. Vaseline oil (liquid paraffin)

d. Purified water

e. Peach oil

83. In a pharmacy each employee is subordinate to only one manager, who makes all the management decisions. What type of organizational structure of the pharmacy's management is it?

a. Adaptive

b. Linear

c. Productive

d. Matrix

e. Functional

84. The pharmaceutical company directs all the efforts to the restoration of the range of endangered medicinal plants listed in the Red Book of Ukraine. What type of responsibility does the firm take on?

a. Social

b. Administrative

c. Criminal

d. Legal

e. Personal

85. A pharmaceutical company promotes a healthy lifestyle, provides sponsorship to an orphanage, and funds sporting events. Name this concept of the company activity:

a. Financial activity

b. Social responsibility

c. Commercial activity

d. -

e. Manufacturing activity

86. A factory workshop producing suspensions and emulsions is going to develop the manufacture of new drugs. What mechanisms can be used for the ultrasound processing of drugs?

a. Disintegrator, liquid whistle

b. Liquid whistle, magnetostrictive source

c. Centrifugal mixer with rotating housing

d. Rotor-pulsation apparatus, dismembrator

e. Dismembrator, electrical impulse plasmolyzer

87. A pharmacy supplies with medicines various groups of patients. Children of what age group receive drugs for free during their outpatient treatment?

a. Under 6 years of age

b. Under 3 years of age

c. Under 10 years of age

d. Under 16 years of age

e. From 3 to 6 years of age

88. The marketing department of the "Aphrodite" company that specializes in production of anti-aging cosmetics has divided the customers into groups, based on their age. What principle of segmentation is the basis for this customer classification?

a. Geographical

- b. Behavioral
- c. Social and economic
- d. Demographic**
- e. Psychographic

89. A pharmacist has prepared a collargol solution. Name the type of disperse system in this case:

- a. True solution
- b. Suspension
- c. Aerosol
- d. Colloid solution**
- e. Emulsion

90. According to the State Pharmacopoeia of Ukraine, the tablets taken internally can be classified into several different types. The pulsatile release tablets can be classified as:

- a. Dispersible tablets
- b. Effervescent tablets
- c. Soluble tablets
- d. Modified-release tablets**
- e. Chewable tablets

91. The chemical structure of Strophanthus cardiac glycosides can be characterized by the presence of the following in position 10 of the steroid ring:

- a. Ethoxy group
- b. Aldehyde group**
- c. Alcoholic hydroxyl
- d. Methoxy group
- e. Phenolic hydroxyl

92. Specify the control methods aimed at detecting mechanical impurities in parenteral solutions:

- a. Amperometric
- b. NMR and UV-visible spectroscopy
- c. Visual optical**
- d. Limulus test
- e. Gravitational

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

- a. No less than 50 m²
- b. No less than 30 m²
- c. No less than 18 m²**
- d. No less than 40 m²
- e. No less than 250 m²

94. A pharmacist prepares an infusion in proportion 1:400. Specify the herbal raw material used in this infusion:

- a. Motherwort grass
- b. Althaea roots
- c. Thermopsis grass**
- d. Oak bark
- e. Camomile grass

95. If potassium salts are put into the colorless flame of a gas burner, the flame colors:

- a. Brick-red
- b. Red
- c. Violet**
- d. Green
- e. Yellow

96. The "Dr Ram" 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. Merchandising
- c. Sales stimulation
- d. Direct marketing
- e. Personal selling

97. In what capacity is benzyl alcohol used as a component of solutions for parenteral administration?

- a. Antimicrobial preservative
- b. Buffer solution
- c. pH regulator
- d. Antioxidant
- e. Isotonicity regulator

98. "Avicenna", a newly founded pharmaceutical company, operates round-the-clock. What employees cannot be assigned to night shifts?

- a. Employees under 30
- b. Employees under 18 (underage)
- c. -
- d. Employees under 25
- e. Employees of retirement age

99. Identification of organic medicinal substances requires the analysis of their functional groups. To identify medicinal substances that are benzoates, an analytical chemist should use:

- a. Sodium acetate solution
- b. Sodium bicarbonate solution
- c. Ammonium chloride solution
- d. Potassium hydroxide solution
- e. Iron(III) chloride solution

100. Thymol and carvacrol are the main active substances of *Thymus vulgaris*. They belong to the following class of bioactive substances:

- a. Flavonoids
- b. Iridoids
- c. Alkaloids
- d. Essential oils
- e. Anthracene derivatives

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

- a. Diethylamino group
- b. Unsubstituted aromatic cycle
- c. Ester bond
- d. Bound hydrochloric acid
- e. Residue of n-aminobenzoic acid

102. The cashier of a pharmacy must record all receipt and withdrawal cash transactions in the relevant documents. What document must be drawn up for issuing cash sums to be accounted for?

- a. Cashier's check
- b. Disbursement cash order
- c. Receipt for issuing money
- d. Profit invoice
- e. Expense invoice

103. Menthol has an antispasmodic and analgesic effect. What herbal raw material is a source of menthol?

- a. *Folia Salviae*
- b. *Folia Absinthii*

c. Folia Menthae piperitae

d. Folia Betulae

e. Folia Eucalypti

104. When pressing tablets, punches of a tableting machine stick to the tablet surface. What technological error is most likely in this case?

a. Insufficient amount of dyes

b. Insufficient amount of leaveners

c. Insufficient amount of lubricants

d. Insufficient amount of adhesives

e. Insufficient amount of diluents

105. During identification of a herbal raw material, an analytical chemist prepared water-based extractions and shook the test tube, which resulted in the formation of a large amount of stable foam. What bioactive substances are present in the material?

a. Fatty oil

b. Saponins

c. Tannins

d. Anthracene derivatives

e. Alkaloids

106. Standard stactometer divides 1 ml of water into:

a. 20 drops

b. 30 drops

c. 25 drops

d. 15 drops

e. 10 drops

107. Marketing department of the Public Company "Lugansk Chemical Pharmaceutical Factory" determined that the demand for a herbal cough remedy, manufactured for children as a syrup, fluctuates significantly within a year. Such demand is considered to be:

a. Irrational

b. Unrealized

c. Incorrect

d. Irregular

e. Inadequate

108. A certain medicinal plant belongs to the Papaveraceae family. It produces a characteristic yellow milky sap and has choleric, antiseptic, and diuretic properties. The main active substance contained in this plant is alkaloid chelidonium. Name this plant:

a. Chelidonium majus

b. Berberis vulgaris

c. Atropa belladonna

d. Hyoscyamus niger

e. Papaver somniferum

109. A patient, who has been taking acetylsalicylic acid, developed hemorrhages of mucous membranes. This phenomenon is associated with:

a. Inhibition of the prothrombin synthesis

b. Increased absorption in the gastrointestinal tract

c. Changed volume of distribution

d. Disorder of protein binding

e. Decreased absorption in the gastrointestinal tract

110. Paracetamol substance has been sent for analysis. Reaction with the solution of iron (III) chloride resulted in the blue-violet coloring. This indicates the presence of:

a. Aldehyde group

b. Ester group

c. Alcoholic hydroxyl

d. Keto group

e. Phenolic hydroxyl

111. Infuser apparatus is used by a pharmacy to prepare:

a. Ointments

b. Emulsions

c. Suspensions

d. Infusions and decoctions

e. Infusion solutions

112. A pharmaceutical factory produces antimicrobial agent nitrofurazone (Nitrofurazone, Furacilin). What initial substance is used in its synthesis?

a. Benzaldehyde

b. Aniline

c. Hydroxyquinoline

d. Furfural

e. Resorcinol

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

a. Oleum Amygdalarum

b. Oleum Lini

c. Oleum Cucurbitae

d. Oleum Ricini

e. Oleum Sojae

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

a. Pectin substances

b. Thickeners

c. Preservatives

d. Emulsifiers

e. Solubilizers

115. A man with arterial hypertension was taking a beta blocker (bisoprolol) for a long time. When his condition improved, he suddenly stopped taking this drug and it resulted in an acute increase of his blood pressure. What complication of the therapy is it?

a. Bradycardia

b. Bronchospasm

c. Withdrawal syndrome

d. Dysbacteriosis

e. Reduced sensitivity

116. When a pharmacy restocks its medical products, the incoming products must undergo quality assessment. Who conducts the assessment in this case?

a. A pharmacist

b. A financially accountable person

c. The head manager of the pharmacy

d. A representative of the laboratory

e. An authorized person

117. A pharmacist has prepared an eyedrops vehicle. What method of sterilization should be chosen in this case?

a. Pasteurization

b. Dry heat

c. Ultraviolet irradiation

d. Membrane filtration

e. Flowing steam

118. Name the list of effective and safe to use drugs and medical products for prevention, diagnosing, and treatment of the most common pathologies, based on their importance for healthcare in a specific country:

- a. Over-the-counter drugs
- b. Drugs subject to strict accounting in a special inventory log
- c. Precursors
- d. Substandard drugs
- e. Essential drugs**

119. To prepare a suspension a medicinal substance should be triturated with a small amount of liquid. Specify the optimal amount of liquid for trituration of 10 g of zinc oxide according to the Deriagin's rule:

- a. 0,5 ml
- b. 5 ml**
- c. 2 ml
- d. 1 ml
- e. 10 ml

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

- a. Levomycetin (Chloramphenicol)
- b. Cephalexin
- c. Erythromycin**
- d. Polymyxin
- e. Tetracycline

121. 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. Metoclopramide
- d. Clarithromycin
- e. Acetylsalicylic acid

122. A 28-year-old woman came to a pharmacy complaining of constipation that developed after antacid treatment. What drug could be the cause of this symptom?

- a. Simethicone
- b. Calcium carbonate
- c. Aluminium-containing drugs**
- d. Magnesium-containing drugs
- e. Ranitidine

123. A pharmaceutical company plans to introduce traditional herbal remedies to new markets. What marketing opportunity according to Ansoff Matrix was used by the company?

- a. Consolidation
- b. Market penetration
- c. Diversification
- d. Product development
- e. Market development**

124. Silibor is a herbal drug that is used as a hepatoprotector. This drug is made from:

- a. Flores Tanacetii
- b. Herba Equiseti arvensis
- c. Flores Crataegi
- d. Semina Sylibi**
- e. Flores Centaureae cyani

125. The head of a pharmacy uses a flexible system of pharmacy management methods. Select from the list below a measure that corresponds with organizational influence methods:

a. Clear distribution of tasks between the employees

b. Material reward (bonuses, increments, pay rise)

c. -

d. Meeting the cultural and social needs of employees

e. Promotion

126. Hemodes and Neohemodes preparations are used as blood plasma substitutes. What is their active substance?

a. Polyvinylpyrrolidone

b. Thiopental sodium

c. Midantan (Amantadine)

d. Menthol

e. Piracetam

127. A marketing consultancy was comparing various drugs containing salbutamol. It was using such parameters as the cost of a treatment course, width of a distribution channel, frequency of medications, etc. The consultancy was determining the:

a. Novelty of the drugs

b. Market stability

c. Life cycle stage of the drugs

d. Competitiveness of the drugs

e. Quality of the drugs

128. A man came to the ophthalmologist complaining of poor twilight vision. Having collected the patient's medical history, the doctor suspected that these signs could be caused by the lack of a certain vitamin. What vitamin is likely to be deficient in this case?

a. Retinol

b. Phylloquinone (Phytomenadione)

c. Tocopherol

d. Ergocalciferol

e. Cholecalciferol

129. Taxes can be divided into direct and indirect. Select an indirect tax from the list:

a. Real estate tax

b. Value added tax

c. Rent

d. Individual income tax

e. Corporate income tax

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

a. Phenothiazine

b. Acridine

c. Indole

d. Purine

e. Benzimidazole

131. Weibel's liquid is necessary to stabilize the solution of a certain substance. Name this substance:

a. Glucose

b. Magnesium sulfate

c. Novocaine

d. Potassium chloride

e. Sodium chloride

132. A patient with iron-deficiency anemia was prescribed iron sulfate. What side effect is characteristic of iron preparations?

a. Elevated blood pressure

b. Osteoporosis

c. Bradycardia

d. Constipation

e. Dysbiosis

133. A patient needs the pharmacy to prepare him a camphor ointment. What concentration of camphor should be in the ointment according to the regulatory documents?

a. 20%

b. 5%

c. 15%

d. 10%

e. 1%

134. A pharmacist at the analytical quality control laboratory uses acidimetry in a non-aqueous medium to study a verapamil hydrochloride substance. What solution would the pharmacist use as a titrant in this study?

a. Potassium bromate solution

b. Perchloric acid solution

c. Zinc sulfate solution

d. Sodium nitrite solution

e. Sodium edetate solution

135. Name the optimal vehicle for soluble vaginal suppositories:

a. Polyethylene oxide

b. Fat

c. Hard fat

d. Cocoa butter

e. Glycerine

136. A pharmacy receives centralized deliveries of goods from the warehouse. Specify the document that is **NOT** NECESSARY for accounting of goods receipt by the pharmacy:

a. Cash receipt order

b. Goods received record book by groups of goods

c. Goods report (Inventory change report)

d. Financial operating report of the pharmacy

e. Goods received record book by item and supplier

137. A pharmacist-analyst of a control-analytical laboratory performs identification of a drug substance in accordance with the State Pharmacopoeia of Ukraine regulations. What result is observed during the test for benzoates with a solution of iron(III) chloride?

a. The solution colors blue and becomes colorless after the addition of ammonia solution

b. A black precipitate forms, which dissolves if a diluted sodium hydroxide solution is added

c. A white precipitate forms, which is insoluble in a diluted hydrochloric acid

d. A pale yellow ether-soluble precipitate forms

e. An intense blue coloring appears

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

a. Writing off

b. Conducting an official investigation

c. Recording as received

d. Elimination

e. Confiscation

139. Hydrogen sulfide is being produced in the process of dry pyrolysis of a certain sulfanilamide drug. Name this drug:

a. Sulfacil sodium

b. Soluble streptocide

c. Streptocide

d. Sulfadimezinum (Sulfadimine)

e. Norsulfazole

140. Pectin is a heteropolysaccharide. What is its pharmacological effect?

- a. Expectorant
- b. Litholytic
- c. Detoxicant**
- d. Astringent
- e. Cardiotonic

141. What antacid can cause constipations, osteoporosis, and encephalopathy when taken for a long period of time?

- a. Magnesium oxide
- b. Sodium alginate
- c. Sodium bicarbonate
- d. Aluminium hydroxide**
- e. Calcium carbonate

142. What parameter characterizes the ratio of the height of the powder in the matrix to the height of the obtained tablet?

- a. Bulk volume
- b. Compaction (compression) coefficient**
- c. Flowability
- d. Porosity
- e. Compression value

143. The solubility of high-molecular compounds depends on their nature. Specify a high-molecular compound that can swell up indefinitely:

- a. Methylcellulose
- b. Gelatin
- c. Pectin
- d. Starch
- e. Pepsin**

144. A pharmacist prepares an injection solution that must be stabilized with 0,1M of hydrochloric acid solution. What solution is to be prepared?

- a. Potassium chloride
- b. Novocaine**
- c. Calcium chloride
- d. Sodium benzoate
- e. Hexamethylenetetramine

145. The doctor has discontinued captopril for a 58-year-old patient diagnosed with arterial hypertension, because the patient has developed a complication. What side effect is the most likely cause for the discontinuation of this drug?

- a. Vomiting
- b. Tinnitus
- c. Cough**
- d. Abdominal pain
- e. Nausea

146. A pharmacist prepares powders with riboflavin. How should riboflavin be introduced into the powder mixture?

- a. Mix the components in the descending order based on their amount
- b. Riboflavin powder should be sifted in advance
- c. "Three layers" method**
- d. Riboflavin should be added on the top of the prepared mixture of other ingredients
- e. Mix the components in the ascending order based on their amount

147. A private pharmacy has received a supply of a drug with 2,3-dihydro-2-methyl-1,4-naphthoquinone-2-sulfonate sodium as an active ingredient. Name this drug:

- a. Ergocalciferol
- b. Riboflavin
- c. Vicasol (Menadione)**
- d. Cocarboxylase hydrochloride
- e. Rutin

148. Mixture is a liquid dosage form for internal use. It is obtained by mixing two or more solid or liquid dosage forms in a solvent. If a mixture contains tinctures, they should be added:

- a. In the same order in which they are listed in the formulation
- b. After poisonous and narcotic substances are dissolved (before concentrates)
- c. First
- d. Last in the order of decreasing ethanol concentration
- e. Last in the order of increasing ethanol concentration**

149. 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. Pharmacist on duty
- b. Supplier representative
- c. Authorized person**
- d. Accountant
- e. Lawyer

150. Phenyll salicylas can be identified by the smell of phenol that is produced when the following is added into the preparation:

- a. NaCl
- b. CuSO₄
- c. H₂SO₄**
- d. AgNO₃
- e. CoCl₂

151. 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. Propranolol
- b. Enalapril
- c. Doxazosin
- d. Bisoprolol
- e. Verapamil

152. A pharmacy has received a batch of herbal raw material - caraway fruits. What medicinal plant is cultivated for harvesting of this herbal raw material?

- a. Anethum graveolens
- b. Foeniculum vulgare
- c. Carum carvi
- d. Coriandrum sativum
- e. Anisum vulgare

153. Standardization of a certain herbal raw material is done by calculating its alkaloid content in terms of hyoscyamine. Name this herbal raw material:

- a. Radices Berberidis
- b. Herba Chelidonii
- c. Fructus Capsici
- d. Folia Belladonnae
- e. Herba Thermopsis lanceolatae

154. The chief manager of a pharmacy designs its organizational structure and job descriptions for its employees. These arrangements belong to the following management method:

- a. Organizational
- b. Psychosocial

- c. Legal
- d. Economic
- e. Simulation

155. A dispensing chemist has dispensed to a pharmacy visitor one package of metformin tablets according to the family doctor's electronic prescription. This purchase is to be reimbursed. How long must a pharmacy keep such prescriptions?

- a. Two months after the current one
- b. Return the prescription to the pharmacy visitor
- c. Five years after the current one
- d. Three years after the current one
- e. One month after the current one

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

- a. Methyl orange
- b. Phenolphthalein
- c. Starch
- d. Bromophenol blue
- e. Murexide

157. A pharmaceutical company produces suppositories made from thermolabile medicinal substances. What method is used in their production?

- a. Steeping
- b. Pressing
- c. Pouring
- d. Rolling
- e. Dispersion

158. Infusions of herbal raw material rich in essential oils should be:

- a. Acidated with hydrochloric acid
- b. Immediately filtered
- c. Infused cold
- d. Filtered without wringing of the solid residue
- e. Prepared in a tightly closed vessel

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

- a. 1/30 of the percolator's volume per 30 minutes
- b. 1/10 of the percolator's volume per 20 minutes
- c. 1/20 of the percolator's volume per hour
- d. 1/24 or 1/48 part of the percolator's working volume per hour
- e. 1/40 of the percolator's volume per hour

160. A man has bought nitroglycerine for sublingual administration in a pharmacy. He wants to know, what side effect might develop after taking this medicine:

- a. Urinary retention
- b. Drowsiness
- c. Headache
- d. Increased blood pressure
- e. Dry cough

161. A pharmaceutical company studies the life cycle of a drug that is being introduced to the market. Name the stage, when sales volume grows slowly and large investments in organization of sales and manufacturing are necessary.

- a. Maturity phase
- b. Decline phase
- c. Market entry
- d. Saturation phase

e. Testing phase

162. A pharmaceutical company, wanting to strengthen its market position in a competitive environment, decided to use trademarks during the implementation of its product policy. What is the purpose of a trademark?

- a. Marketing research
- b. Market segmentation
- c. Differentiation and protection of the company-produced medicines on the market
- d. Study of quantitative characteristics of the market
- e. Determining the need for medicines

163. A pharmacy offers to its customers a chance to measure their blood pressure. What type of goods is it?

- a. Unsought goods
- b. Specialty goods
- c. Convenience goods
- d. Nondurable goods
- e. Service

164. A certain drug explodes when heated to 180°C or upon impact and, therefore, must be handled carefully during receipt and storage. This drug is:

- a. Calcium chloride
- b. Barium chloride
- c. Alcoholic iodine solution
- d. Activated carbon
- e. Nitroglycerine solution

165. Storage of medical products in pharmacies is carried out in compliance with the law. What relative humidity is necessary for storage of rubber products to prevent their drying and deformation?

- a. At least 40%
- b. At least 20%
- c. At least 30%
- d. At least 50%
- e. At least 65%

166. An analytical chemist studies an iodine substance. What volumetric solution is recommended by the State Pharmacopoeia of Ukraine for its quantitative determination?

- a. Sodium hydroxide
- b. Sodium edetate
- c. Potassium bromate
- d. Sodium thiosulfate
- e. Hydrochloric acid

167. A 45-year-old man has been taking long-acting nitrates twice a day for a year. Currently the decrease in effectiveness of the pharmacotherapy is being observed. What side-effect can be suspected in the first place?

- a. Development of nitrate tolerance
- b. Myocardial infarction
- c. Impairment of coronary circulation
- d. Progressing ischemic heart disease
- e. Progressing coronary atherosclerosis

168. What indicator of the pharmacy's financial performance is determined by the volume of sales, where the income from sales is equal to the expenses of the pharmacy?

- a. Profitability
- b. Breakeven point
- c. Markup level
- d. Goods turnover
- e. Profit

169. A 10-year-old child was prescribed an antibiotic to treat pneumonia, after which the mother noticed deterioration of the child's hearing. What group of antibiotics could have caused such a complication?

- a. Cephalosporins
- b. Macrolides
- c. Aminoglycosides
- d. Penicillins
- e. Fluoroquinolones

170. In what order must alcohol-containing solutions be added into aqueous solutions during the preparation of liquid dosage forms?

- a. In any order
- b. In the order of decreasing alcohol concentration
- c. First into the vial for dispensing
- d. In the order of increasing alcohol concentration
- e. In the order of increasing volume of alcohol-containing solutions

171. When preparing suspensions, the medicinal substance is ground with a small amount of liquid. What is the optimal amount of liquid for comminution of 20 mg of zinc oxide according to the Deriagin's rule?

- a. 0.5 mL
- b. 1 mL
- c. 10 mL
- d. 5 mL
- e. 2 mL

172. *Origanum vulgare* herbal raw material is harvested during the flowering. How is it harvested?

- a. The leaves are plucked with the stem
- b. Only the tips of the inflorescences are cut
- c. The whole plant with a root is pulled out from the soil
- d. The whole plant is dug up
- e. The grass is cut with a knife or sickle at a distance of 20-30 cm from the ground

173. 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. Planning
- b. Motivation
- c. Organization
- d. Delegation
- e. Control

174. When should aromatic water be added into a mixture, if it functions as a dispersing medium?

- a. After concentrated solutions
- b. After solid medicinal substances are dissolved
- c. First
- d. Last, because of its essential oil content
- e. Before ethanol-containing liquids are added

175. 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 aurea*
- b. *Bidens radiata*
- c. *Bidens cernua*
- d. *Bidens frondosa*
- e. *Bidens tripartita*

176. A pharmaceutical company wants to strengthen its position in the competitive market

environment. It decides to use brand names as a part of its trade policy. What is the purpose of a brand name?

- a. Differentiation between the competing medicines on the market
- b. Justification of a higher price for the medicine
- c. Ensuring the necessary quality of medicines
- d. Eligibility for registration in the List of medicines and medical products with state-controlled prices
- e. It is a mandatory condition to be able to sell medicines at a reduced price to certain population groups

177. Schisandra chinensis seeds contain lignans. What pharmacological effect will the preparations made of Schisandra chinensis have?

- a. Reparative
- b. Hepatoprotective
- c. Sedative
- d. Tonic
- e. Antitumor

178. To work properly, a pharmacy needs sufficient staff. What job position belongs to the auxiliary staff of a pharmacy?

- a. Pharmacist
- b. -
- c. Packer
- d. Accountant
- e. Head of a department

179. A pharmaceutical company plans to sell its products in another country together with a foreign company. What type of company's entry to the foreign market is it?

- a. Franchising
- b. Tender
- c. Import
- d. Direct investments
- e. Joint venture

180. To identify pilocarpine hydrochloride it is necessary to use reaction with sodium nitroprusside in an alkaline medium (Legal's test). Resulting cherry-red coloring confirms presence of the following in the pilocarpine structure:

- a. Chloride ions
- b. Lactonic ring
- c. Methyl group
- d. Methylene group
- e. Imidazole ring

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

- a. Rectification
- b. Extraction
- c. Lyophilization
- d. Recuperation
- e. Sublimation

182. What pricing policy is used by the management of a pharmacy, if during the price formation for pharmaceutical products the main focus is the prices offered by the nearest pharmacies, rather than pharmacy's own expenses or demand for the products?

- a. Demand-based pricing
- b. Breakeven pricing
- c. Competition-based pricing
- d. Tender pricing
- e. Cost-based pricing

183. A 60-year-old patient, who had suffered a myocardial infarction, was prescribed acetylsalicylic acid as an antiaggregant. Specify the optimal daily dosage of acetylsalicylic acid for antiaggregatory effect:

- a. 400 mg
- b. 100 mg
- c. 300 mg
- d. 500 mg
- e. 200 mg

184. 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 chloride, purified water
- c. Thermopsis grass, purified water
- d. Thermopsis grass, sodium bicarbonate, purified water
- e. Thermopsis tincture, purified water

185. Atropa belladonna grass extract is a component of compound antispasmodic drugs. Select such drug from the list:

- a. Herbogastrine
- b. Solutan
- c. Bellasthesin
- d. Urolesan
- e. Olimetinum

186. A herbal raw material was sent for analysis: rounded cordate leaves with incised margins that are irregularly, coarsely, and finely toothed; the upper leaf surface is naked, while its lower surface is covered in white down. Leaf petioles are thin, with a groove on the upper part, often downy. Leaf blade length is usually 8-15 cm, a petiole is approximately 5 cm long. The upper leaf surface is green, while the lower leaf surface is whitish-gray. No odor. The taste is slightly bitter with a slimy texture. What herbal raw material is it?

- a. Folia Urticae
- b. Folia Menthae
- c. Folia Farfarae
- d. Folia Eucalypti
- e. Folia Uvae-ursi

187. The marketing department of a pharmaceutical factory determined that the demand for the echinacea syrup for kids greatly fluctuates in response to the smallest changes in its price. What type of demand is it?

- a. Perfectly inelastic demand
- b. Elastic demand
- c. Unitary demand
- d. Universal demand
- e. Inelastic demand

188. 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

189. A pharmacist has prepared an injection solution of ascorbic acid. What substance is necessary for solution stabilization in this case?

- a. Sodium sulfite
- b. Sodium citrate

- c. Sodium bromide
- d. Sodium acetate
- e. Sodium chloride

190. Birch buds are used as a diuretic. Quality of the herbal raw material is determined by its content of:

- a. Lipids
- b. Iridoids
- c. Saponins
- d. Essential oil
- e. Vitamins