

1. A herbal raw material that contains coumarin and chromone derivatives is a source of drugs with thrombolytic, photosensitizing, and antispasmodic action. Which compound in this group has a proven photosensitizing effect?

- a. Furanochromon kelin
- b. Furocoumarin psoralen**
- c. Free coumarin
- d. Pyranocoumarin visnadin
- e. Hydroxycoumarin esculin

2. A pharmaceutical wholesaler constantly monitors expiration dates of medicines and their storage and transportation conditions. What type of control is exercised in this case?

- a. Social
- b. Ongoing**
- c. Preliminary
- d. Financial
- e. Final

3. Limit cash balance is the maximum amount of monetary funds that can remain in the cash desk of an organization at the end of a workday. This limit is established by the following authorities:

- a. Local authorities
- b. -
- c. Tax Inspectorate
- d. Chief physician
- e. Pharmacy management**

4. Audit of the macroenvironment of a pharmaceutical company has revealed a change in the number, density, and age structure of the population. What factors of the macroenvironment were studied?

- a. Technological
- b. Political
- c. Environmental and ecological
- d. Economic
- e. Socio-demographic**

5. Testing of a calcium lactate pentahydrate substance requires a reaction with a solution of thioglycolic acid in the presence of citric acid and an ammonia solution. What impurity can be detected using this reaction?

- a. Sulfates
- b. Iron**
- c. Chlorides
- d. Potassium
- e. Ammonium salts

6. During quantitative determination of ascorbic acid by means of iodometry the following should be used as an indicator:

- a. Bromphenol blue
- b. Diphenylcarbazone
- c. Phenolphthalein
- d. Starch**
- e. Murexide

7. What herbal drug produced from alkaloid-containing raw materials can be recommended for neurasthenia, insomnia, menopausal disorders?

- a. Novopassit**
- b. Ergotamine
- c. Securinine nitrate
- d. Glaucine hydrochloride
- e. Vinblastine

8. Hyoscyamine and scopolamine are typically contained in the plants of the following family:

- a. Papaveraceae
- b. Solanaceae**
- c. Apocynaceae
- d. Fabaceae
- e. Asteraceae

9. Which one of the listed solutions for injections must be stabilized with a 0.1 mol-eqL solution of hydrochloric acid?

- a. Novocaine (Procaine)**
- b. Caffeine and sodium benzoate
- c. Ascorbic acid
- d. Sodium bicarbonate
- e. Sodium thiosulfate

10. 1,8-cineole is a bactericidal component of essential oil. Specify the medicinal herb that is grown in Ukraine and contains 1,8-cineole in its essential oil:

- a. Eucalyptus globulus
- b. Salvia officinalis**
- c. Origanum vulgare
- d. Inula helenium
- e. Juniperus communis

11. A pregnant woman with signs of acute rhinitis came to a pharmacy. What drug for symptomatic treatment of rhinitis will be the safest in this case?

- a. Beclomethasone preparations
- b. Essential oil-based preparations
- c. Salt solutions based on iso- and hypotonic sodium chloride solutions**
- d. Xylometazoline preparations
- e. Cromoglicic acid preparations

12. One of the substances listed below is NOT a vitamin:

- a. Calcium pangamate
- b. Calcium pantothenate
- c. Ergocalciferol
- d. Nicotinic acid
- e. Calcium gluconate**

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

- a. Bidens tripartita
- b. Calendula officinalis
- c. Frangula alnus**
- d. Salvia officinalis
- e. Eucalyptus globulus

14. When solution of a medicinal agent is being heated with sodium hydroxide, it produces an acrid smell; red litmus paper soaked in water becomes blue. What ion is being identified in the course of this procedure?

- a. Arsenite ion
- b. Carbonate ion
- c. Nitrate ion
- d. Ammonium ion**
- e. Acetate ion

15. What quality indicator is subject to additional control during the production of eye drops in the form of suspensions?

- a. Particle size**
- b. Purification methods

- c. Dry residue
- d. Acid value and peroxide value
- e. Moisture content

16. Where on the shop floor of a pharmacy should various nutritional supplements and health food be placed?

- a. By their Anatomical Therapeutic Chemical Classification

**b. On separate shelves and in separate shopwindows**

- c. By their application
- d. Alongside medicines
- e. By their pharmacotherapy group

17. A pharmaceutical warehouse has received a batch of herbal raw material - a bark of Quercus robur. What active substances should be measured in this material, according to the State Pharmacopoeia of Ukraine?

- a. Flavonoids
- b. Tannins**
- c. Anthracene derivatives
- d. Coumarins
- e. Essential oils

18. What method is recommended by the State Pharmacopoeia of Ukraine for quantitative determination of potassium chloride substance that is used in treatment of hypokalemia?

- a. Iodometry
- b. Polarimetry
- c. Cerimetry
- d. Bromatometry
- e. Argentometry**

19. Schedule of sanitation actions in pharmacies is regulated by the relevant regulatory acts. Cleaning day at a pharmacy must be scheduled at least once:

- a. In 5 days
- b. In a week
- c. In 3 days
- d. In 10 days
- e. In a month**

20. Working hours for the pharmacy workers are reduced. What is the length of the work week for the pharmacist-analyst?

- a. 24 hours
- b. 36 hours**
- c. 32 hours
- d. 30 hours
- e. 45 hours

21. A man came to a pharmacy asking for a litholytic and diuretic drug <<Marelín>>. If there is no such drug in the pharmacy, powdered roots and rhizomes of a certain plant can be recommended as a substitute. Name this plant:

- a. Rhodiola rosea
- b. Sanguisorba officinalis
- c. Dryopteris filix-mas
- d. Valeriana officinalis
- e. Rubia tinctorum**

22. Standard herbal material of lily-of-the-valley is obtained by drying it at a temperature of 50-60<sup>o</sup>C to prevent the following possible biochemical process:

- a. Oxidation of terpenoids
- b. Volatilization of essential oils
- c. Enzymatic hydrolysis of cardiac glycosides**

- d. Oxidation of phenolic compounds
- e. Oxidation of resins

23. Select from the list a medical substance that is an indole derivative:

- a. Isoniazid
- b. Dibazol (Bendazol)
- c. Diazepam
- d. Indometacin**
- e. Glaucine hydrochloride

24. Bilitrast is an X-ray contrast substance. What reagent can confirm the presence of phenolic hydroxyl in its molecule?

- a. Hydrochloric acid solution
- b. Iron(III) chloride solution**
- c. Iodine dissolved in potassium iodide
- d. Alcoholic iodine solution
- e. Silver nitrate solution

25. The main active substances of Rhizomata et radices Eleutherococci are eleutherosides of various chemical nature. What class of bioactive substances includes syringoresinol and its derivatives that determine the tonic and adaptogenic properties of this herbal raw material?

- a. Lignans**
- b. Iridoids
- c. Xanthones
- d. Flavonoids
- e. Coumarins

26. Folia Eucalypti is used as an antiseptic, anti-inflammatory, analgesic, and bactericidal agent. What group of bioactive substances is measured for the quality control of Folia Eucalypti?

- a. Polysaccharides
- b. Flavonoids
- c. Essential oils**
- d. Cardiac glycosides
- e. Alkaloids

27. Pharmaceutical analysis of glutamic acid requires the determination of nitrogen after mineralization with concentrated sulfuric acid. Ammonia that forms during the test is pumped away into the receiving flask. What solution should the receiving flask contain during this test?

- a. Titrated sodium edetate solution
- b. Saturated sodium chloride solution
- c. Iodized potassium iodide solution
- d. Titrated hydrochloric acid solution**
- e. Freshly prepared tannin solution

28. Senna (cassia) foliage contains anthracene derivatives. Their presence can be confirmed by qualitative reaction with:

- a. Iron (II) sulfate
- b. Fehling's reagent
- c. Alkali**
- d. Iron ammonium alum
- e. Molisch's reagent

29. How are pharmacies classified in Ukraine based on their commercial and manufacturing functions?

- a. Self-financing pharmacies and pharmacies financed from the state budget
- b. Compounding and retail pharmacies**
- c. Retail and hospital pharmacies
- d. State, community-owned, and private pharmacies
- e. Pharmacies with centralized and decentralized accounting

30. Bank is a financial mediator in pharmacy's payments. Payment of taxes withheld from the employees' salary into the budget requires the following document:

- a. Payment order
- b. Cash order
- c. Accounting form
- d. Check payable in account
- e. Cash register receipt

31. A regional pharmaceutical market has a large number of pharmaceutical companies, none of which is able to control the market prices. The companies offer interchangeable medicines. What type of market is it?

- a. -
- b. Market with pure (free) competition**
- c. Pure monopoly market
- d. Oligopolistic market
- e. Limited monopoly market

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

- a. Sodium bromide
- b. Sodium acetate
- c. Sodium chloride
- d. Sodium sulfite**
- e. Sodium citrate

33. What adjuvants are used in manufacturing of tablets to change their taste?

- a. Antioxidants
- b. Leavening agents
- c. Corrigents**
- d. Fillers
- e. Thickeners

34. There are certain legal requirements to the format of a prescription. Physicians that have a private practice must state the following in the upper left corner of a prescription form:

- a. Medical facility seal
- b. Surname and initials of the doctor
- c. Own address
- d. License number
- e. Own address, license number and its date of issue**

35. What amount of toxic substance and vehicle is contained in 10.0 of trituration (1:10)?

- a. 0.5 and 9.5
- b. 0.01 and 9.99
- c. 0.05 and 9.95
- d. 0.1 and 9.9
- e. 1.0 and 9.0**

36. Vitamin K is known to take part in formation of prothrombin and to facilitate blood coagulation. What herbal raw material accumulates significant amounts of vitamin K and has a hemostatic effect?

- a. Fructus Hippophaes
- b. Folia Urticae**
- c. Folia Fragariae
- d. Semina Hippocastani
- e. Folia Menthae piperitae

37. A pharmacist has prepared an aqueous extract using the cold infusion method. What herbal raw material was it?

- a. Marshmallow roots**
- b. Arctostaphylos leaves

- c. Buckthorn bark
- d. Mint leaves
- e. Thermopsis grass

38. A technological controller uses Marquis reagent to identify the substance of acetylsalicylic acid after acid hydrolysis. Positive effect of the reaction would be indicated by the following coloring:

- a. Blue
- b. Violet
- c. Pink**
- d. Yellow
- e. Green

39. A pharmaceutical company produces sterile aqueous solutions for eye rinsing and moisturizing, as well as for impregnation of the materials that are applied to the eyes topically. Name these solutions:

- a. Eye sprays
- b. Eye inserts
- c. Eye lotions**
- d. Eye ointments
- e. Eye drops

40. Berberis vulgaris herbal raw material is a source of medicinal substances with cholagogic and hemostatic effect. What parts of this plant are harvested as a herbal raw material?

- a. Leaves and seeds
- b. Leaves and flowers
- c. Roots and fruits
- d. Leaves and fruits
- e. Roots and leaves**

41. An accountant conducts necessary calculations for remuneration of labor. Name the type of remuneration that is due for labor carried out according to the work standards and is paid within the amount determined by basic or piece wages for factory workers and salaries for office workers:

- a. Financial aid
- b. One-off payment
- c. Increment
- d. Basic pay**
- e. Bonus

42. The manager of a pharmacy chain has drawn up a document, in which he asks a pharmaceutical factory to provide him with the information about the assortment of ointments manufactured by this factory. What document was drawn up by the manager?

- a. Contract
- b. Offer
- c. Request**
- d. Statement
- e. Complaint

43. Motivation is one of the management functions. A motive can be described as:

- a. A conscious incentive to act in a certain way**
- b. Something that is important for a person
- c. -
- d. A certain discomfort, a feeling that something is lacking
- e. Psychological characteristics of people that help them acquire certain types of knowledge

44. General sedimentation reagents are used to identify alkaloids in an extract obtained from herbal raw materials. Select from the list one such reagent.

- a. Froehde reagent
- b. Marquis reagent
- c. Vitali-Morin reagent
- d. Erdman reagent

e. Dragendorff reagent

45. Natural persons registered as small business entities with simplified taxation scheme are subject to limitation of the annual amount of sales proceeds. Specify the proceeds limit:

- a. 5 000 000 UAH
- b. 3 000 000 UAH
- c. 100 000 UAH
- d. 750 000 UAH

e. 500 000 UAH

46. A 42-year-old man with community-acquired pneumonia was prescribed a long-term antibiotic treatment. What drugs should be prescribed to this patient to prevent development of dysbiosis?

- a. Antitussive drugs
- b. Mucolytic agents
- c. Expectorants
- d. Probiotics**
- e. Antispasmodics

47. A control laboratory needs to analyze streptomycin powder for injections. To identify it according to the State Pharmacopoeia of Ukraine sodium hydroxide is added into the dissolved powder, the resulting substance is heated, and then iron (III) chloride solution is added, which results in violet coloring of the substance. This test is known as:

- a. Thiochrome test
- b. Biuret test
- c. Maltol test**
- d. Vitali-Morin reaction
- e. Ninhydrin test

48. 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. Nonsteroidal anti-inflammatory drugs
- b. Cardiac glycosides**
- c. Antibiotics
- d. Mucolytics
- e. Inhaled glucocorticoids

49. An infusion and a liquid extract used as cardiotonics are obtained from Crataegus oxyacantha flowers and fruits. What active substance that is a component of this herbal raw material can be determined using spectrophotometry?

- a. Papaverine
- b. Cytisine
- c. Atropine
- d. Lipids
- e. Flavonoids**

50. Among various types of tablet external layers there are enterosoluble coatings. Where in the body are they dissolved?

- a. Oral cavity
- b. Stomach
- c. Intestine**
- d. Esophagus
- e. Rectum

51. What adjuvants improve the wettability and water permeability of the components during the tablet production?

- a. Antifriction materials
- b. Thickeners
- c. Leaveners**
- d. Film formers

e. Solvents

52. A pharmacy opens a bank account to store funds and conduct ongoing business transactions.

What kind of account should be opened?

- a. Letter of credit
- b. Provisional
- c. Investment
- d. Deposit

**e. Current**

53. Buckthorn bark is used as a laxative. This herbal raw material colors red if an alkaline solution is added, which indicates the presence of the following substances:

- a. Flavonoids
- b. Anthracene derivatives**
- c. Tannins
- d. Alkaloids
- e. Vitamins

54. The price of a medicine depends on many factors. Which of the listed below is an internal factor of price formation for a pharmaceutical manufacturer?

**a. Manufacturing costs**

- b. Middleman markup
- c. Demand for the product
- d. Pricing policy of the competitors
- e. Customer preferences

55. Tween-80 is being introduced into an emulsion system. What is the role of Tween-80 in emulsions?

- a. Preservative
- b. Taste correction agent
- c. Solvent
- d. Antioxidant

**e. Emulsifier**

56. 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. Gnaphalium uliginosum herba
- b. Digitalis purpurea folium
- c. Althaea officinalis herba**
- d. Hyoscyamus niger folium
- e. Urtica dioica folium

57. When dispensing an antacid and ofloxacin in tablets, the dispensing chemist warned the customer that these drugs should be taken separately with 2-hour interval in between. Simultaneous taking of both drugs:

- a. Increases antacid effectiveness
- b. Decreases antacid effectiveness
- c. Increases ofloxacin absorption
- d. Increases risk of dysbiosis

**e. Decreases ofloxacin absorption**

58. A 35-year-old patient has been prescribed a potassium-sparing diuretic. Select one such drug from the list:

- a. Bisoprolol
- b. Triamterene**
- c. Prazosin

- d. Diltiazem
- e. Furosemide

59. Money received for the goods sold are being transferred to the pharmacy from its outlet. What document must be drawn up by a cashier for the receipt of this monetary sum?

- a. Cash receipt order
- b. Payment order
- c. Cashier's check
- d. Cash withdrawal order
- e. Bank statement

60. Presence of phenolic hydroxyl in the structure of pyridoxine hydrochloride can be confirmed by application of the following solution:

- a. Iron (III) chloride
- b. Sodium sulfate
- c. Potassium permanganate
- d. Sodium nitrite
- e. Silver nitrate

61. A pharmacy needs to prepare a 1% alcohol solution of methylene blue. What concentration of alcohol must be used for this purpose?

- a. 40%
- b. 90%
- c. 96%
- d. 70%
- e. 60%

62. What group of antibacterial agents is used as first-line drugs in treatment of uncomplicated community-acquired pneumonia in young people?

- a. Nitrofurans
- b. Semisynthetic penicillins
- c. Oxyquinolines
- d. Tetracyclines
- e. Aminoglycosides

63. A 35-year-old patient with tachycardia has been administered propranolol. Which of the following reactions may be caused by the use of beta-blockers?

- a. Cumulation
- b. Drug dependence
- c. Bronchospasm
- d. Constipations
- e. Blood pressure rise

64. What can be observed when aluminum-magnesium antacids and iron preparation are used simultaneously?

- a. Increased risk of hepatotoxicity
- b. Increased effectiveness of antacids
- c. Decreased blood pressure
- d. Reduced effectiveness of iron preparations
- e. Increased blood pressure

65. What department of a wholesale firm is tasked with search for and analysis of potential suppliers' commercial offers, as well as concluding supply contracts and supervision of contract fulfillment?

- a. Finance department
- b. Marketing department
- c. Stores development
- d. Shipping department
- e. Supply department

66. A 25-year-old woman is in the third trimester of her pregnancy. During her regular examination, US detected a malformation in the fetus. Medical history of the patient shows that she was taking large doses of diazepam without prescription during her pregnancy. What type of side effect has occurred in this case?

- a. Mutagenic
- b. Embryotoxic
- c. Teratogenic**
- d. Carcinogenic
- e. Fetotoxic

67. Alkalimetry is used to determine the quantitative content of diphenhydramine hydrochloride antihistamine. What solution is used as a titrant in this analysis?

- a. Potassium permanganate solution
- b. Potassium bromate solution
- c. Hydrochloric acid solution
- d. Sodium hydroxide solution**
- e. Sodium thiosulfate solution

68. Name the drug of choice for treatment of arterial hypertension during pregnancy:

- a. Captopril
- b. Alpha-methyldopa**
- c. Propranolol
- d. Sodium nitroprusside
- e. Furosemide

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

- a. Sodium metabisulfite
- b. Hydrochloric acid**
- c. Ascorbic acid
- d. Sodium hydroxide
- e. Sodium bicarbonate

70. A pharmacy has received a prescription for the preparation of a solution. What substance requires the presence of sodium chloride and a hot solvent during the dissolution?

- a. Sodium bromide
- b. Urotropin
- c. Streptocide (Sulfanilamide)
- d. Furacilin (Nitrofurazone)**
- e. Sodium iodide

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

- a. Preservatives**
- b. Solubilizers
- c. Thickeners
- d. Pectic materials
- e. Emulsifiers

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

- a. 1000 mL
- b. 50 mL
- c. 100 mL**
- d. 500 mL
- e. 300 mL

73. What reagent should be used by a dispensing chemist-analyst in a reaction for pyridine ring identification?

- a. Hydrochloric acid
- b. Cobalt nitrate solution
- c. Chromotropic acid disodium salt
- d. Silver nitrate solution
- e. Cyanogen bromide reagent**

74. 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

75. What method is used to prepare a suspension with basic bismuth nitrate?

- a. Dispersion with turbidization**
- b. Physical condensation
- c. Chemical condensation
- d. Continental method
- e. Solvent substitution

76. Gum is a polysaccharide substance that contains calcium and magnesium salts of uronic acids and neutral monosaccharides. By solubility arabin, bassorin, and cerasin derivatives can be distinguished. What gum is insoluble in cold water?

- a. Tragacanth
- b. Acacia
- c. Cherry**
- d. Plum
- e. Apricot

77. 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. Bisoprolol
- c. Verapamil
- d. Enalapril
- e. Doxazosin**

78. A pharmacy has received a prescription for the preparation of powders. What substance must be added after sterilizing the powder?

- a. Osarsolum
- b. Streptomycin sulfate**
- c. Ephedrine hydrochloride
- d. Magnesium oxide
- e. Streptocide (Sulfanilamide)

79. A sum of properties that make the medicines capable of meeting the needs of the consumers, when used as intended, is called:

- a. Trade dress
- b. Appearance
- c. Marking
- d. Pharmacological action
- e. Quality**

80. Inorganic medicines are identified by their cations and anions. What should be used by an analytical chemist for identification of medicinal substances that contain potassium?

- a. Benzoic acid solution

b. Tartaric acid solution

c. Hydrochloric acid solution

d. Nitric acid solution

e. Acetic acid solution

81. A certain primary document can be described as follows: "It is a document printed by a cash register, when it makes calculations regarding the goods sold". Specify this document:

a. Accounting form

b. Payment order

c. **Fiscal receipt for the goods sold (or services rendered)**

d. Cash withdrawal receipt

e. Cash cheque

82. 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. Administrative

b. Economic

c. -

d. **Socio-psychological**

e. Technological

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

a. **Packer**

b. Pharmacist

c. Accountant

d. -

e. Head of a department

84. A powder containing a substance with specific weight has been prepared in a pharmacy. Name this substance:

a. Bolus alba

b. Sodium bicarbonate

c. Sugar

d. **Basic bismuth nitrate**

e. Talcum

85. A pharamacy has been licensed for wholesale distribution of medicinal products. What sales operation belongs to a wholesale distribution?

a. **Sale to other organizations for commercial use**

b. Sale of over-the-counter drugs

c. Sale of extemporal dosage forms

d. Sale of drugs to chronically ill patients

e. Sale of ready-to-use drugs

86. A doctor has given the patient a prescription for tramadol. What prescription form must be used in this case?

a. F-1 and F-3 forms

b. F-1 form

c. 2 copies of F-1 form

d. **F-3 form**

e. 2 copies of F-3 form

87. During quantitative determination of Vicasol (Menadione) by means of cerimetry, the following indicator is used:

a. Methyl orange

b. Crystal violet

c. Naphtholbenzein

d. Methyl red

e. Ferroin

88. During limit test for aluminium admixture, the State Pharmacopoeia of Ukraine recommends to use the following solution as the basic reagent:

a. Sodium tetraphenylborate

b. Hydroxyquinoline

c. Sodium hypophosphite

d. Barium chloride

e. Thioglycolic acid

89. What morphological feature is diagnostic for the Matricaria chamomilla herbal raw material?

a. Curved hemispherical receptacle with membranous bracts

b. Spherical receptacle with membranous bracts

c. Solid spherical receptacle

d. Conical, glabrous, and hollow receptacle

e. Solid hemispherical receptacle

90. Core tablets that are to be made into dragees must not have a flat shape. Why such requirement is necessary?

a. To avoid prolonged contact with overlaying suspension

b. To prevent them from adhesion to each other

c. To improve their appearance

d. They are not durable enough

e. To speed up the process of applying the coating

91. Aesculus hippocastanum seeds as a herbal raw material can be standardized by their quantitative content of aescin that belongs to the following group of bioactive substances:

a. Coumarins

b. Anthracene derivatives

c. Tannins

d. Saponins

e. Flavonoids

92. A patient, who is undergoing treatment for ischemic heart disease, after physical exertion felt an acute pain in the cardiac area. What drug can be prescribed in this case for quick relief of the pain syndrome?

a. Enalapril

b. Nitroglycerine

c. Captopril

d. Corglycon (convallatoxin)

e. Prazosin

93. A compound powder is being made of ingredients taken in relatively equal measure. What ingredients should be comminuted first?

a. Volatile

b. Coloring

c. Colored

d. Macrocrystalline

e. Microcrystalline

94. Vitali-Morin's reaction is used to identify tropane alkaloids in herbal raw material. Name the alkaloid that can be detected by means of this specific reaction:

a. Scopolamine

b. Morphine

c. Papaverine

d. Codeine

e. Platiphyllin

95. 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. Nitritometry
- b. Complexometry
- c. Acidimetry
- d. Bromatometry
- e. Iodometry

96. The Income Statement of a pharmacy for the first quarter of 20XX contains the following entries: goods turnover - 45 000 UAH, production cost of products sold - 30 000 UAH, turnover costs - 10 000 UAH. Determine the income:

- a. 5 000 UAH
- b. 40 000 UAH
- c. 30 000 UAH
- d. 15 000 UAH
- e. 35 000 UAH

97. A pharmaceutical wholesaler sells ointment bases (vaseline, lanolin, etc.) in bulk ("an gross") to the pharmacies that make extemporaneous compounds. What sales method (type of distribution) is typical for selling these goods?

- a. Mass sales method
- b. -
- c. Selective method
- d. Integrated method
- e. Intensive method

98. Bromatometry allows quantitative analysis of the following drug:

- a. Benzoic acid
- b. Sodium salicylate
- c. beta-Alanine
- d. Glutamic acid
- e. Potassium acetate

99. 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 expences or demand for the products?

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

100. What should be used by an analytical chemist in the pharmacopoeial analysis of medicinal substances that contain iron(III)?

- a. Sodium nitrite solution
- b. Ammonia solution
- c. Potassium thiocyanate solution
- d. Potassium permanganate solution
- e. Ammonium chloride solution

101. A pharmacy provides certain categories of ill persons with medicines free of charge or at a reduced price. What conditions allow free of charge supply of out-patients with necessary medicines?

- a. Cuts and abrasions
- b. Diabetes mellitus
- c. Headache
- d. Cold
- e. Muscle pain

102. A patient with arterial hypertension has developed a dry cough in the course of his treatment.

The doctor suspects a side effect caused by one of the medicines the patient was taking. This medicine most likely belongs to the following group:

- a. Angiotensin-converting-enzyme inhibitors
- b. Ganglionic blockers
- c. Calcium channel blockers
- d. Imidazoline receptor blockers
- e. Diuretics

103. As a result of heparin overdose, a patient developed bleeding. What medicine must be used as an antidote in this case?

- a. Protamine sulfate
- b. Naloxone
- c. Thiosulfate
- d. Unithiol (Dimercaptopropansulfonate sodium)
- e. Methionine

104. Microcapsules are made by coating solid particles of the substance being encapsulated with a shell consisting of metallic silver, zinc, etc. Name this method of making microcapsules:

- a. Pelleting
- b. Slurrying of the nuclei
- c. Polymerization
- d. Galvanization**
- e. Coacervation

105. Pharmaceutical factory received a batch of Althaea roots. What reagent should be used in histochemical test for slime production in the course of qualitative analysis?

- a. 1% phloroglucinol solution
- b. 1% ammonium iron(III) sulfate solution
- c. Alcoholic solution of methylene blue**
- d. Dragendorff reagent
- e. Sudan III solution

106. Infusion of Althaea roots is being prepared for a patient. What pattern of infusion should be chosen in this case?

- a. 60 minutes at room temperature
- b. 30 minutes of water bath infusion and 10 minutes of cooling at room temperature
- c. 15 minutes of water bath infusion and 45 minutes of cooling at room temperature
- d. 30 minutes at room temperature**
- e. 30 minutes of water bath infusion and immediate filtering without cooling

107. During the transportation of alkaloid drugs, the markings on their packaging were damaged. Qualitative group reactions for alkaloids revealed that the Vitali-Morin test was positive. Therefore, the analyzed drug belongs to the following group of derivatives:

- a. Isoquinoline derivatives
- b. Purine derivatives
- c. Quinuclidine derivatives
- d. Tropane derivatives**
- e. Indole derivatives

108. 50 ml of injection solution has been made in a pharmacy. Specify the process of solution sterilization:

- a. 140<sup>o</sup>C - 12 minutes
- b. 180<sup>o</sup>C - 30 minutes
- c. 160<sup>o</sup>C - 15 minutes
- d. 110<sup>o</sup>C - 15 minutes
- e. 120<sup>o</sup>C - 8 minutes**

109. Complex drug product Urolesan is a litholytic, antispasmodic, and diuretic agent. It contains ethanolic extract of:

a. *Origanum vulgare*

b. -

c. *Thymus serpyllum*

d. *Rhododendron tomentosum*

e. *Matricaria chamomilla*

110. The director of a pharmaceutical company is engaged in strategic planning. What is the final stage of this process?

a. Evaluation and analysis of the external environment

**b. Strategy evaluation**

c. Choosing a strategy

d. Formulation of the mission

e. Implementation of the strategic plan

111. A pharmaceutical company has opened several new regional offices and now searches for medical representatives. What stage of recruiting process is usually a final one?

a. Preliminary interview

**b. Targeted selection interview**

c. Filling in a questionnaire

d. Submission of a resume

e. Telephone interview

112. 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. Rutin

**b. Vicasol (Menadione)**

c. Ergocalciferol

d. Cocarboxylase hydrochloride

e. Riboflavin

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

a. Methacycline

**b. Ampicillin**

c. Rifampicin

d. Amikacin

e. Cephalexin

114. A 36-year-old patient developed acute pyelonephritis. What antibacterial agents has a nephrotoxic effect?

**a. Gentamicin**

b. Penicillin

c. Tetracycline

d. Ampicillin

e. Erythromycin

115. A 60-year-old man has come to a pharmacy with complaints of impaired twilight vision, dry sclera, cracked and peeling skin. The dispensing chemist suspected hypovitaminosis and recommended the customer to take the following drug after consultation with the physician:

a. Ergocalciferol

b. Tocopherol acetate

**c. Retinol acetate**

d. Vicasol (Menadione)

e. Ascorbic acid

116. Pharmacies can prepare medicines based on individual formulations. What makes up the retail price of such medicines?

**a. Cost of ingredients, package, and labor**

- b. Cost of ingredients and package
- c. Cost of ingredients
- d. Cost of the ingredients that make up this dosage form
- e. Cost of labor and price markup

117. A pharmacist makes powders by grinding one of the formulation components with ethyl alcohol. This technology is typically applied when working with the following substance:

- a. Talcum
- b. Starch
- c. Streptocid**
- d. Bolus alba
- e. Zinc oxide

118. The pharmacological activity of medicines largely depends on their chemical structure. Which of the following drugs is a pyrazole derivative?

- a. Piracetam
- b. Metronidazole
- c. Metamizole sodium**
- d. Bendazol
- e. Thiamazole

119. A pharmacy makes medicines according to individual prescriptions. How often must the pharmacy staff change their working clothes?

- a. At least once a month
- b. At least once per shift
- c. At least once a week
- d. At least twice a month
- e. At least twice a week**

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

- a. Elixir pectoralis
- b. 1% citral alcohol solution
- c. 30% hydrogen peroxide (Perhydrol)**
- d. Leonurus tincture
- e. Ammonia spirit-anise spirit drops

121. What substance is a component of the powders enclosed in gelatin capsules?

- a. Dimedrol (Diphenhydramine)
- b. Magnesium oxide
- c. Ethacridine lactate**
- d. Streptocide (Sulfanilamide)
- e. Glucose

122. Publicly-owned Isotope factory is the only manufacturer of radiopharmaceuticals in Ukraine.

What type of distribution is characteristic of radioactive drugs?

- a. Sample
- b. Selective
- c. Bulk
- d. Exclusive**
- e. Intensive

123. 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. Commodity circulation
- b. Profitability
- c. Profit
- d. Markups**

e. Expenses

124. What drug facilitates dissolution of cholesterol stones in the gallbladder?

- a. Magnesium sulfate
- b. Ursodeoxycholic acid**
- c. Ademethionine
- d. Cynara dry extract
- e. Silybum dry extract

125. A woman with open tuberculosis is undergoing in-patient treatment in the tuberculosis clinic.

What drug was prescribed by her physician for etiotropic treatment?

- a. Isoniazid**
- b. Doxycycline hydrochloride
- c. Acyclovir
- d. Metronidazole
- e. Benzylpenicillin (Penicillin G)

126. The extraction process consists of several stages. What is the final stage of the extraction process?

- a. Maceration
- b. Washing the herbal raw material with an extractant
- c. Mass transfer**
- d. Dissolution
- e. Extraction of primary juice

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

- a. Published in mass media
- b. Published in the company's annual report
- c. Obtained from publications in scientific magazines
- d. Published in statistical reference books
- e. Collected for the first time for a specific purpose**

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

- a. Trypsin
- b. Ambroxol
- c. Carbocysteine
- d. Bromhexine
- e. Acetylcysteine**

129. Lipophilicity is very important for the bioavailability of a substance. Name the numerical parameter that characterizes lipophilicity.

- a. Correction factor
- b. Coefficient of surface tension
- c. Stoichiometric coefficient
- d. Coefficient of viscosity
- e. Distribution coefficient**

130. Benzocaine is a substance with local anesthetic activity. According to its chemical structure, it is a derivative of:

- a. n-Aminobenzoic acid**
- b. n-Aminobenzene sulfonic acid
- c. n-Chlorobenzoic acid
- d. n-Aminophthalic acid
- e. n-Aminosalicylic acid

131. A pharmacy has received a batch of drugs according to the invoice. Who is authorized to conduct intake quality control when the goods arrive to the pharmacy?

- a. Tax officer

b. Head manager

c. Employee appointed to this task by the head manager

d. Pharmacist

e. Officer of a local division of the state inspectorate for drug quality control

132. What type of loan does the pharmacy receive in the form of goods, and returns mainly in monetary form?

a. State loan

b. Bank loan

c. Commercial loan

d. Prolonged loan

e. Term loan

133. What lubricants are used in tablet manufacturing?

a. Water, ethanol

b. Starch paste

c. Solutions of high-molecular compounds

d. Calcium stearate, stearic acid

e. Tween 80, Aerosil

134. As the result of reduction of alcoholic solutions of 5-nitrofuran derivatives by means of their reaction with zinc in the presence of diluted hydrochloric acid, the following occurs:

a. Precipitation and gassing

b. Precipitation

c. Solution decoloration

d. Color change from yellow to black

e. Ammonia production

135. Hypericum perforatum grass contains hypericin. What is the pharmacological effect of this substance?

a. Anticonvulsant

b. Expectorant

c. Analgesic

d. Antiasthmatic

e. Antidepressant

136. A 46-year-old pharmacy customer suffers from chronic bronchitis and needs a medicine to facilitate expectoration of thick viscous sputum. What drug is indicated in this case?

a. Ambroxol

b. Oxeladin

c. Codeine phosphate

d. Butamirate

e. Salbutamol

137. A patient, who for the last three weeks was taking a laxative - a decoction of Frangula bark, has noticed a significant decrease in its clinical effect. What is the name of this phenomenon?

a. Sensitization

b. Cumulation

c. Withdrawal syndrome

d. Idiosyncrasy

e. Tolerance

138. What nonsteroidal anti-inflammatory drug is indicated for treatment of the patient's rheumatoid arthritis, if this patient has a history of peptic ulcer disease of the stomach?

a. Ibuprofen

b. Diclofenac sodium

c. Indomethacin

d. Celecoxib

e. Acetylsalicylic acid

139. 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. Cortisone acetate
- b. Betamethasone dipropionate**
- c. Hydrocortisone acetate
- d. Prednisone
- e. Prednisolone

140. Hydrogen peroxide solution can be bought in different concentrations in a pharmacy. What concentration should be offered to a patient, if the patient's receipt does not specify hydrogen peroxide concentration?

- a. 20%
- b. 2%
- c. 30%
- d. 10%
- e. 3%**

141. A pharmacist prepares 180 ml of adonis grass infusion. How much herbal raw material should be taken to prepare this infusion?

- a. 15.0
- b. 6.0**
- c. 18.0
- d. 10.0
- e. 2.0

142. 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. NS-2 (neutral glass 2)
- b. AB-1 (non-boric glass)
- c. USP-1**
- d. NS-2 A (neutral glass 2A)
- e. MTB (colorless glass for medical containers)

143. In the process of drug identification, an analytical chemist of the State Inspection for Quality Control of Medicines performs ninhydrin test. What drug is being identified?

- a. Tyrosine**
- b. Retinol acetate
- c. Resorcin
- d. Nitrofural
- e. Sulfamethoxazole

144. Veratrum water is used as an antiparasitic 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. Cardiac glycosides
- e. Steroidal saponins

145. The pharmacy received the goods from the supplier. In the process of acceptance by the authorized person, a discrepancy in the number of medicines was discovered. What document does the authorized person need to issue?

- a. Contract of sale
- b. Product report
- c. Logbook of receipt of goods by group
- d. Register of medicinal products received by the subject of economic activity
- e. Act on established discrepancy in quantity and quality**

146. Based on the medical certificate, a patient can receive financial assistance due to temporary

disability. Financial assistance for temporary disability **CANNOT** be provided:

- a. -
  - b. If sick leave is taken for child care
  - c. In case of disease (trauma)
  - d. If only sanatorium-and-spa treatment is required
- e. In case of intentional self-harm**

147. Number of mediators that pharmaceutical goods pass on their way from manufacturer to consumer is called:

- a. Width of distribution channel
  - b. -
  - c. Volume of distribution channel
  - d. Level of distribution channel
- e. Length of distribution channel**

148. What preservative did the pharmacist use to ensure the stability of eye drops?

- a. Methyl cellulose
  - b. Polyvinyl alcohol
  - c. Sodium chloride
- d. Boric acid**
- e. Hydrochloric acid

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

- a. 0.02 g**
- b. 0.05 g
  - c. 0.03 g
  - d. 0.04 g
  - e. 0.01 g

150. 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. Liquidation
- b. Indexation

**c. Diversification**

- d. Bankruptcy
- e. Insurance

151. Anthocyanidins are euflavonoid compounds that color plant tissues in shades that vary from pink to black-purple. What characteristic feature of anthocyanidins is used in their analysis?

- a. Amorphous state
- b. Alcohol precipitation
- c. Solubility in fats
- d. Ability to change color depending on the pH of the medium
- e. Ability to sublime

152. The duration of a maternity leave for pregnancy and childbirth is calculated in total. What is the total number of calendar days allocated for a maternity leave?

- a. 126 days
- b. 50 days
- c. 115 days
- d. 70 days
- e. 100 days

153. A pharmacist needs to prepare a trituration of platiphylline hydrotartrate (1:10). What filler would be optimal for making this trituration?

- a. Rice starch
- b. Corn starch

- c. Mannitol
- d. Refined sugar
- e. Lactose

154. Local anesthetics can fall into different chemical classes. Benzocaine is a drug that belongs to:

- a. Aromatic amino acid amides
- b. Aromatic sulfo acid amides
- c. Aromatic amino-aldehydes
- d. Aromatic amino acid esters
- e. Aromatic ketones

155. Strategic planning of pharmaceutical companies consists of several consecutive stages. What stage is the final one?

- a. Environment assessment and analysis
- b. Choice of strategy
- c. Setting goals and tasks
- d. Analysis of organisation's internal strength and weaknesses
- e. Strategy assessment

156. A 60-year-old patient diagnosed with ischemic heart disease developed bradycardia of 50 min. What drug will be contraindicated in this case?

- a. Heparin
- b. Propranolol
- c. Nifedipine
- d. Nitrosorbide (Isosorbide dinitrate)
- e. Nitroglycerin

157. After mineralization of bromocamphor with zinc dust, bromide-ions can be detected in the filtrate in the presence of CHCl<sub>3</sub> by performing a reaction with:

- a. Chloral hydrate
- b. Chloramine
- c. Chloromethane
- d. Sodium chloride
- e. Acetyl chloride

158. An alkaloid drug has the chemical name of 1,3,7-Trimethyl-3,7-dihydro-1H-purine-2,6-dione.

Name this substance:

- a. Norfloxacin
- b. Caffeine
- c. Chloramphenicol
- d. Ampicillin
- e. Phenazone

159. A pharmacist needs to add a stabilizer to prepare an atropine sulfate solution for injections.

What stabilizer would the pharmacist choose for this purpose?

- a. Ascorbic acid
- b. Hydrochloric acid
- c. Sodium bicarbonate
- d. Sodium metabisulfite
- e. Sodium hydroxide

160. 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. Pyridine cycle
- b. Steroid cycle
- c. Imidazole cycle
- d. Xanthine cycle
- e. Naphthalene cycle

161. A pharmacy has received a receipt for preparation of a dermatological ointment with a non-specified vehicle. What vehicle should be used in this case?

- a. Soap-glycerine base
- b. Vaseline
- c. Vaseline and lanolin
- d. Lanolin
- e. Gelatin-glycerine gel

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

- a. Amoxicillin
- b. Cefuroxime
- c. Levofloxacin
- d. Benzylpenicillin sodium salt
- e. Clarithromycin

163. What effect will anthracene derivatives have, if -OH- groups are located in both benzene rings of anthraquinone?

- a. Choleretic
- b. Diuretic
- c. Laxative
- d. Sedative
- e. Litholytic

164. What medicine would be the best choice for a pregnant woman with signs of acute respiratory viral disease, who needs to lower her body temperature?

- a. Acetylsalicylic acid
- b. Nimesulide
- c. Indomethacin
- d. Diclofenac sodium
- e. Paracetamol

165. 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. Gas chromatography
- b. Thin layer chromatography
- c. Adsorption chromatography
- d. Ion-exchange chromatography
- e. Paper chromatography

166. A woman at the third trimester of her pregnancy fell ill with pneumonia. A doctor prescribed her a fluoroquinolone. What negative effect can it have on the fetus?

- a. Chondrotoxic
- b. Hematotoxic
- c. Neurotoxic
- d. Hepatotoxic
- e. Nephrotoxic

167. To identify a substance, an analytical chemist performs a reaction with the cyanogen bromide reagent and aniline. What substance is being analyzed in this case?

- a. Citric acid
- b. Salicylic acid
- c. Benzoic acid
- d. Ascorbic acid
- e. Nicotinic acid

168. What modern method is used to fill ampoules with injectable solutions?

- a. Vortex filling

- b. Syringe filling
- c. Ultrasonic filling
- d. Vacuum filling
- e. Chamber filling

169. All business transactions at a pharmacy must be documented. What type of cash operation must be recorded with a receipt cash order?

- a. Advance salary payments
- b. Issuing cash sums to be accounted for
- c. Salary payments
- d. Transfer of the revenue to the bank account
- e. Revenue of the pharmacy

170. Specify the isotonic concentration of a sodium chloride solution:

- a. 1.8%
- b. 1.0%
- c. 0.9%
- d. 5.0%
- e. 10.0%

171. A pharmacy has received a formulation for eye drops with protargol (silver proteinate). What substance will be used to make the eye drops isotonic?

- a. Sodium sulfate
- b. No isotonation is needed
- c. Sodium chloride
- d. Sodium nitrate
- e. Boric acid

172. The amount of temporary disability benefits to be paid is calculated taking into account the insured record of service of an employee. What percentage of temporary disability benefits will be paid to an employee with a disability certificate and more than 8-year-long insured record of service?

- a. 100% of salary
- b. 50% of salary
- c. 90% of salary
- d. 60% of salary
- e. 75% of salary