

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

- a. Meningococcal infection
- b. Hemorrhagic stroke
- c. Angina pectoris attack
- d. Hypertensive crisis**
- e. Myocardial infarction

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

- a. Helical (vertical) rotation**
- b. Employee turnover
- c. Recruitment
- d. Mixed rotation
- e. Spiral (horizontal) rotation

3. 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. Imidazole ring
- c. Lactonic ring**
- d. Methylene group
- e. Methyl group

4. During anti-Helicobacter quadrotherapy patient's feces colored black. What drug could have caused this effect?

- a. Clarithromycin
- b. Amoxicillin
- c. Metronidazole
- d. Bismuth subcitrate**
- e. Omeprazole

5. An analytical chemist has conducted a qualitative reaction to confirm the presence of a steroid ring in the prednisolone molecule. For this purpose the following reagent was used:

- a. Concentrated sulfuric acid**
- b. Acetic anhydride
- c. Copper tartrate reagent
- d. Phenylhydrazine sulfate
- e. Hydroxylamine hydrochloride

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

- a. Comminute it with glycerin
- b. Grind it with a part of the molten base
- c. Comminute it with an alcohol or ether
- d. First dissolve it in the minimum amount of water**
- e. Dissolve it in the molten base

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

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

8. An analytical chemist performs quantitative analysis of isoniazid by means of direct bromatometry with volumetric solutions of potassium bromate, potassium bromide, hydrochloric acid and methyl red as an indicator. This method is based on the following reaction:

- a. Bromination of the pyridine ring
- b. Opening of the pyridine ring
- c. Oxidation of the hydrazine residue with potassium bromide
- d. Reduction of the hydrazine residue with bromine
- e. Oxidation of the hydrazine group with bromine**

9. An analytical chemist performs the identification of ascorbic acid in an injection solution according to the State Pharmacopoeia of Ukraine. Its interaction with a certain solution produces a gray precipitate. Name this solution:

- a. Silver nitrate**
- b. Sodium carbonate
- c. Calcium chloride
- d. Ammonium hydroxide
- e. Sodium nitrite

10. A pharmacist at the extemporaneous compounding department of a pharmacy has received a prescription for an infusion marked "Cito". How long such an aqueous extract must be infused in a water bath?

- a. 25 minutes**
- b. 15 minutes
- c. 45 minutes
- d. 30 minutes
- e. 10 minutes

11. To replenish its fixed assets, the pharmacy made a decision to arrange a credit with the trading bank. What document must be concluded in writing between the creditor and the debtor in this case?

- a. Credit contract**
- b. Balance sheet
- c. License
- d. Auditor's conclusion
- e. Full material liability contract

12. The total turnover of goods at a pharmacy consists of retail and wholesale turnover. What belongs to the wholesale turnover?

- a. Dispensing medicines according to outpatient prescriptions
- b. Dispensing prescription medicines to the people
- c. Dispensing medical products to outpatients
- d. Dispensing extemporaneous medicines manufactured by a pharmacy according to the inpatient prescriptions
- e. Dispensing over-the-counter medicines to the people**

13. Medications Passit and Novopassit are used as tranquilizing, sedative and mild hypnotic agents. These medications are produced from the following grass:

- a. Lesser periwinkle
- b. Garden sage
- c. Purple passionflower**
- d. Elecampane
- e. Three-lobed beggarticks

14. Genetically induced adverse reaction to a certain drug is caused by various enzyme defects. Name this reaction:

- a. Rebound effect
- b. Steal syndrome
- c. Withdrawal syndrome
- d. Idiosyncrasy**

e. Dysbiosis

15. A pharmaceutical company produces deep-acting ointments. What is the mechanism of action of the active substances contained in resorptive ointments?

- a. Protect the skin from external factors
- b. Prevent drying and contamination of the epidermis
- c. Absorbed by the outer layers of the skin
- d. Protect the skin from microbial infection
- e. Reach the systemic circulation and enhance the effect of drugs**

16. To identify a drug, an analytical chemist used the reaction of azo dye formation. What drug was being analyzed in this case?

- a. Pilocarpine hydrochloride
- b. Morphine hydrochloride
- c. Clonidine hydrochloride
- d. Papaverine hydrochloride
- e. Procaine hydrochloride

17. During merchandise analysis a dispensing chemist should reject herbal raw material if it:

- a. Has first-degree vermin infestation
- b. Contains other parts of the target plant
- c. Contains poisonous plants**
- d. Contains excessive moisture
- e. Contains other non-poisonous plants

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

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

19. Thymus serpyllum grass is harvested in Ukraine. At what stage of plant growth is this herbal raw material harvested?

- a. Before the flowering
- b. During the flowering stage**
- c. After harvesting the fruits
- d. When the fruits are ripe
- e. Before the formation of green fruits

20. A formaldehyde solution was received for analysis. What reagent should be used to identify this substance?

- a. Sulfuric acid
- b. Chromotropic acid**
- c. Tartaric acid
- d. Acetic acid
- e. Benzoic acid

21. Urethral suppositories are being made for a patient. What parameters should be specified by the doctor in the formulation for the pharmacist to be able to calculate the necessary amount of the vehicle correctly?

- a. Length and quantity of the suppositories
- b. Diameter and vehicle of the suppositories
- c. Quantity and vehicle of the suppositories
- d. Diameter, length, and quantity of the suppositories
- e. Diameter and quantity of the suppositories

22. A pharmacy has decided to obtain a license to make extemporaneous preparations. For this

purpose it purchased a refrigerator, a cabinet dryer, and other industrial equipment. The purchased equipment belongs to the following type of assets:

- a. Package
- b. Not accounted as assets
- c. Fixed assets
- d. Goods
- e. Non-negotiable tangible assets

23. Pyridoxine hydrochloride and cyanocobalamin are not recommended to be administered in the same syringe due to their chemical incompatibility. What type of chemical reaction occurs between these compounds?

- a. Oxidation
- b. Reduction
- c. Complexation
- d. Neutralization
- e. Hydrolysis

24. Under the current legislation there is a certain list of controlled substances that require keeping of the special inventory log. Select the drug that belongs on this list:

- a. Digoxin
- b. Solpadeine
- c. Phenobarbital
- d. Novocaine
- e. Analgin (Metamizole)

25. A patient has been diagnosed with essential hypertension and prescribed an adequate treatment with antihypertensive drugs. However, two months later the patient began to notice a slight cough. What drug can cause this side effect?

- a. Amlodipine
- b. Hypothiazide (Hydrochlorothiazide)
- c. -
- d. Furosemide
- e. Captopril

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

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

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

- a. Quantitative determination
- b. Transparency
- c. Particle size
- d. Color
- e. Sterility

28. A 24-year-old man suffers from exacerbation of chronic bronchitis. This condition is accompanied by production of a small amount of viscous sputum. What drug is indicated to facilitate the expectoration in this case?

- a. Fenoterol
- b. Budesonide
- c. Ipratropium bromide
- d. Acetylcysteine
- e. Oxeladin

29. A pharmaceutical company plans to launch the production of a new medicine. What stage of

product development includes making the cost estimates for its manufacturing and sales and preliminary calculations of the price and planned profits?

- a. Commercial manufacturing
- b. Economic analysis
- c. Generation of the ideas
- d. Filtration of the ideas
- e. Test marketing

30. A pharmaceutical company produces animal-derived biostimulants. Solcoseryl preparation is obtained from the following raw material:

- a. Bovine spleen
- b. Human blood
- c. Bovine blood
- d. Velvet antlers
- e. Bovine trachea

31. A pharmacist prepares rectal suppositories in the pharmacy. Name the acceptable range, within which the average weight of such suppositories may vary:

- a. 2.0-5.0
- b. 3.0-6.0
- c. 4.0-7.0
- d. 5.0-8.0
- e. 1.0-4.0

32. A 63-year-old woman suffering from diabetic nephropathy with functional disturbance of the kidneys needs etiotropic treatment for focal pneumonia. What drug is CONTRAINDICATED in this case?

- a. Natural penicillins
- b. Macrolides
- c. Synthetic penicillins
- d. Aminoglycosides
- e. Combined penicillins

33. A pharmacy has received goods from a warehouse, which were delivered by the warehouse transport. Therefore, goods receipt requires the following accompanying document:

- a. Specifications to the contract of delivery
- b. Contract of delivery
- c. Financial statement of the supplier
- d. Motor waybill
- e. All of the listed

34. What herbal raw material is used as an industrial source of tannins?

- a. *Cotinus coggygria* leaves
- b. Rose hips
- c. *Persicaria hydropiper* grass
- d. Nettle leaves
- e. *Solidago canadensis* grass

35. A pharmacist has prepared a tincture from *Adonis vernalis* grass. What special technique was necessary in this case to extract the active substances?

- a. They must be extracted in a neutral medium
- b. They must be extracted in an acidic medium
- c. They must be extracted in an alkaline medium
- d. They must be extracted in a slightly alkaline medium
- e. They must be extracted in a weakly acidic medium

36. A herbal raw material (fruits) was sent for analysis. This material consists of glossy black drupes 8 mm in diameter with one large spherical light-brown seed that is very firm. Its chemical analysis showed the presence of condensed tannins. What plant is the source of this herbal raw material?

- a. *Vaccinium myrtillus*
- b. *Rhamnus cathartica*
- c. *Schisandra chinensis*
- d. *Prunus padus***
- e. *Ribes nigrum*

37. A pregnant woman complains of elevated blood pressure up to 160/100. What hypotensive drug should she use in this case?

- a. Enalapril
- b. Methyldopa**
- c. Bisoprolol
- d. Losartan
- e. Reserpine

38. When is it necessary to renew the agreement on collective (team) material responsibility?

- a. When 30% of employees from the original team leave the team
- b. Whenever a new employee joins the team
- c. Whenever an employee leaves the team
- d. When 25% of employees from the original team leave the team
- e. When 50% of employees from the original team leave the team

39. A pharmaceutical analyst identifies the substance of potassium acetate. What reagent confirms the presence of potassium cation in the substance?

- a. Tartaric acid**
- b. Zinc oxide
- c. Sodium hydroxide
- d. Iron (III) chloride
- e. Potassium permanganate

40. Calendula Ointment is placed on the shelf next to Dr. Theiss Calendula Ointment. What approach to the shelf layout is used in this pharmacy?

- a. Seasonality
- b. Among competitors**
- c. Corporate block layout
- d. Doubling product facings
- e. By package size

41. A patient needs eye drops with riboflavin. What substance should the pharmacist add to the solution to ensure its isotonicity, if there are no specific instructions in the doctor's prescription?

- a. Sodium chloride
- b. Sodium nitrate
- c. Glucose
- d. Boric acid
- e. Sodium sulfate

42. A pharmaceutical company that specializes in the manufacture of herbal medicines is expanding its scope of work and establishes the production of cosmetics. What development strategy did the company choose?

- a. Modernization
- b. -
- c. Survival
- d. Diversification**
- e. Stability

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

- a. Ambroxol
- b. Codeine phosphate

c. Doxycycline

d. Ascorbic acid

e. Acetylcysteine

44. The cholagogue derived from Rosa canina fruit is used in treatment of liver and gallbladder diseases. Name this drug:

a. Chophytol

b. Phytolyt

c. Cholosas

d. Altan

e. Allochol

45. A pharmacy must keep the following receipts for 3 years, not counting the present one:

a. Medicines provided for free or at a discount due to social benefit programs

b. Psychotropic drugs at the full price

c. Anabolic steroids at the full price

d. Clophelin (clonidine) tablets at the full price

e. Narcotic substances in their pure form at the full price

46. A pharmacist prepares a vaseline-based ointment. The vehicle was heated to 40°C. What substance was introduced into the heated vehicle?

a. Camphor

b. Vinilin (polyvinyl butyl ether)

c. Benzoic acid

d. Streptocide

e. Anesthesin

47. A patient has been receiving palliative treatment with morphine hydrochloride for a week. Following that the patient demands continuation of this treatment. What phenomenon has occurred in this case?

a. Cumulation

b. Tolerance

c. Dependence

d. Potentiation

e. Summation

48. Specify the formula of extractant calculation in the process of creating a tincture:

a.  $E = \frac{m_{\text{losses}}}{m_{\text{raw material}}} \cdot 100\%$

b.  $\mu = \frac{m_{\text{end product}}}{m_{\text{raw material}}} \cdot 100\%$

c.  $m_{\text{raw material}} = m_{\text{end product}} + m_{\text{losses}}$

d.  $V = V_{\text{tincture}} \cdot n + m_{\text{raw material}} \cdot K_{\text{alcohol absorption}}$

e.  $V = V_{\text{tincture}} + m_{\text{raw material}} \cdot K_{\text{alcohol absorption}}$

49. A pharmaceutical factory produces suppositories with hydrophilic bases. What parameter is measured during standardization of such suppositories?

a. Dry residue

b. Boiling point

c. Dissolution time

d. Mechanical strength

e. Resuspension

50. Several species of Polygonum genus are used in medicine. One of these species has rootstocks rich in tanning agents, which are used to treat diarrhea. Name this species:

a. Polygonum alpinum

b. Polygonum aviculare

c. Polygonum bistorta

d. Polygonum persicaria

e. Polygonum hydropiper

51. To decrease business risks, a pharmaceutical company decided to expand its activity and penetrate into new market (to open a fitness center). Name this process:

- a. Diversification
- b. Modernization
- c. Conglomeration
- d. Intensification
- e. Integration

52. How long must a pharmacy keep its logbooks with the records about the balance of narcotic drugs, psychotropic substances, and precursors?

- a. 3 years
- b. 1 year after the current one
- c. 5 years
- d. 7 years after the current one
- e. 2 years after the current one

53. What final document is used for the preparation of the report on the discrepancies revealed in the course of inventory at the pharmacy?

- a. Commercial report
- b. Invoice
- c. Checklist
- d. Act on the inventory results
- e. Inventory item description

54. A patient with atrophic hypoacid gastritis type A has been diagnosed with a complication in the blood system - the development of B<sub>12</sub>-deficiency anemia. What medicine is pathogenetically justified in this case?

- a. Riboflavin
- b. Nicotinic acid
- c. Cyanocobalamin
- d. Pyridoxine
- e. Thiamine

55. A pharmacy makes aqueous extracts. What extractant is used in preparation of infusions and decoctions?

- a. Mint oil
- b. Ethyl alcohol
- c. Purified water
- d. Peach oil
- e. Glycerin

56. In the course of its development a pharmaceutical company forms its culture. Culture of a pharmaceutical company is typically based on:

- a. Legislation in force
- b. Relevant pharmaceutical practices
- c. Values, traditions, and behavioral norms characteristic of company employees
- d. Specifics of manufacturing process
- e. License agreement

57. For treatment of enteric infection a 36-year-old woman was prescribed a nitrofurantoin derivative that is poorly absorbed in the intestine and takes its effect along the intestinal tract. Name this drug:

- a. Nifuroxazide
- b. Nalidixic acid
- c. Furadonin (Nitrofurantoin)
- d. Furacilin (Nitrofurantoin)
- e. Nitroxoline

58. A 65-year-old man has been taking nitroglycerin continuously for 2 months. Lately, he has been observing a gradual decrease in its clinical effect. Name the concept that describes this phenomenon:



- a. Idiosyncrasy
- b. Reye syndrome

c. Tolerance

- d. Withdrawal syndrome
- e. Anaphylactic reaction

59. Tyndallization is used at a pharmaceutical factory as one of sterilization methods for thermolabile substances. What is the essence of this method?

- a. Autoclaving at 119-121 °C with pressure at 1,0-1,1 atm
- b. Sterilization with flowing steam at 100 °C

c. Triple heating of solution to 40-60 °C with 24-hour-long intervals in between for thermostating

- d. Sterilization with high-frequency and microwave frequency current
- e. Sterilization with dry heat at 180-200 °C for a lengthy period of time

60. A patient, who has undergone treatment for community-acquired pneumonia, complains of hearing impairment. What antibacterial drug could result in such a side-effect?

- a. Clarithromycin
- b. Ciprofloxacin
- c. Gentamicin
- d. Cefazolin
- e. Amoxicillin/clavulanate

61. In the process of inpatient treatment of bronchial asthma, the patient was prescribed Euphylline (Theophylline) intravenously. What side effect of this drug must be managed first?

- a. Hepatotoxicity
- b. Nephrotoxicity

c. Cardiotoxicity

- d. Hematotoxicity
- e. Chondrotoxicity

62. What quantification method must be used for the analysis of isoniazid substance, according to the regulations of the State Pharmacopoeia of Ukraine?

- a. Acidimetry in a non-aqueous medium
- b. Alkalimetry
- c. Photocolorimetry

d. Bromatometry

- e. Nitritometry after alkaline hydrolysis

63. To ensure the quality of medicines the pharmacy devotes much attention to quality control. The following document is the quality assurance of a drug:

- a. Registration certificate
- b. Certificate of compliance with hygiene regulations
- c. Sanitary-epidemiological certificate
- d. Quality certificate
- e. Sanitary passport

64. A drug that is subject to reimbursement has been dispensed at a pharmacy based on an electronic prescription. How long such a prescription must be stored in the information and telecommunications system?

- a. 5 years
- b. 2 years
- c. 6 months
- d. 3 months

e. 3 years

65. 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 cernua
- b. Bidens frondosa

- c. *Bidens radiata*
- d. *Bidens aurea*
- e. *Bidens tripartita*

66. A doctor has prescribed pessaries of unspecified mass. What mass should be chosen when pessaries are being prepared in a pharmacy?

- a. 3,0
- b. 1,5
- c. 6,0
- d. 0,5
- e. 4,0

67. What type of marketing should be used by a pharmaceutical company in a situation, when the demand for medicines declines?

- a. Evolving marketing
- b. Stimulational marketing
- c. Synchromarketing
- d. Remarketing
- e. Conversion marketing

68. Profitability is one of the economic indicators of the pharmacy's trading activity. It is calculated as a:

- a. Ratio of the sum of profits to the total cost of fixed assets  $\times 100\%$
- b. Ratio of the sum of profits to the sum of turnover  $\times 100\%$
- c. Ratio of the sum of profits to the sum of cost price of the goods  $\times 100\%$
- d. -
- e. Ratio of the sum of profits to the sum of expences  $\times 100\%$

69. An important indicator of business activity is profitability of a business. Specify the indicators that can be used to measure the profitability:

- a. Profit/turnover
- b. Liquidity/solvency
- c. Income/turnover
- d. Turnover/production cost
- e. Turnover/income

70. *Centaurium erythraea* grass increases appetite and is a component of herbal teas for stomach. What active substance causes this effect of the herbal raw material?

- a. Simple phenols
- b. Saponins
- c. Flavonoids
- d. Iridoids
- e. Alkaloids

71. A pharmacist approached the chief manager of the pharmacy with a request for pay raise. The chief manager turned down this request. What type of conflict is it?

- a. Interpersonal conflict
- b. Conflict between individual and group
- c. Intergroup conflict
- d. Intrapersonal conflict
- e. Dysfunctional conflict

72. Sodium and potassium oxides are introduced into the ampoule glass to:

- a. Decrease its melting point
- b. Increase its dimming ability
- c. Increase its thermal stability
- d. Increase its mechanical stability
- e. Increase its chemical stability

73. A pharmaceutical factory prepares syrups for taste-masking of medicines. What substance must be removed from such syrups to prevent jellification of the end product?

- a. Sucrose
- b. Fructose
- c. Glucose
- d. Pectin
- e. Starch

74. A pharmacy visitor asked the pharmacist to recommend her an anthelmintic drug that would be effective against Ascaris roundworms. Select one such drug from the list.

- a. Pyrazinamide
- b. Riboflavin
- c. Calcitonin
- d. Piperazine
- e. Ribavirin

75. To prepare decoctions with the volume of 1000-3000 ml, they should be infused in a boiling water bath for:

- a. 30 minutes
- b. 45 minutes
- c. 15 minutes
- d. 40 minutes
- e. 25 minutes

76. How long must a pharmacy keep the documents that confirm the fact of sale of medicines and medical products?

- a. 10 years
- b. 5 years
- c. 3 months
- d. 3 years
- e. 1 year

77. The "Pharmastar" pharmaceutical company develops new dosage forms for its medicines. What type of product policy in marketing is it?

- a. Modernization
- b. Reduction
- c. Product modification
- d. Differentiation
- e. Diversification

78. A pharmacist has remained working long after the working day was officially over. How is this work period called?

- a. Overtime
- b. Dayshift
- c. Extended time
- d. Nightshift
- e. Regular hours

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

- a. Reaction with iron(III) chloride
- b. Fehling's test
- c. Molisch's test
- d. Foaming reaction
- e. Dragendorff's test

80. A certain type of herbal raw material is being collected in spring during sap flow. Specify this material:

- a. Roots

b. Bark

c. Infructescences

d. Buds

e. Flowers

81. The head manager of Pharmacy №5 that belongs to the <<Hippocrates>> company was transferred to be the head manager of Pharmacy №1 within the same network. What type of human resources movement is it?

a. Horizontal rotation

b. Employee turnover

c. Mixed rotation

d. Vertical rotation

e. Diagonal rotation

82. Purpurea glycoside A and purpurea glycoside B are the main active substances of Digitalis purpurea. They belong to the following class of bioactive substances:

a. Phenolic compounds

b. Anthracene derivatives

c. Cardiac glycosides

d. Alkaloids

e. Flavonoids

83. The management plans to open a new pharmacy in one of the local villages. Such activity can be identified as:

a. Conglomerate diversification

b. Horizontal integration

c. Horizontal diversification

d. Vertical integration

e. Growth strategy

84. A patient from the oncology department came to a pharmacy with a prescription for a drug that is needed for the treatment of his main disease. How will the pharmacist provide this medicine?

a. 100% free

b. With a 10% discount

c. For the full cost

d. With a 25% discount

e. For 50% of the cost

85. A 36-year-old woman with herpetic rash on her lips has come to a pharmacy. Recommend her a drug for topical treatment:

a. Levofloxacin

b. Fluconazole

c. Metronidazole

d. Amikacin

e. Acyclovir

86. A certain drug can be quantitatively assessed by means of direct alkalimetry in glycerine, mannitol, or other polyhydric alcohol medium. This drug is:

a. Glutaminic acid

b. Salicylic acid

c. Benzoic acid

d. Acetylsalicylic acid

e. Boric acid

87. A potassium permanganate solution needs to be prepared for a patient. What solvent should be used in this case?

a. Mint water

b. Water for injections

c. Demineralized water

d. Ethyl alcohol

e. Freshly prepared purified water

88. In his management policy, the head manager of the <<Health Formula>> pharmacy actively uses planning, material incentives and sanctions, pricing, and distribution of profits and capital investments. These means and approaches belong to the following group of management methods:

a. Psychosocial management methods

b. Economic management methods

c. Legal management methods

d. Indirect control methods

e. Organizational management methods

89. An analytical chemist during the identification of phenylephrine hydrochloride (mesaton) performed a reaction with a solution of iron(III) chloride, which resulted in a purple coloring. The presence of what functional group in the structure of the drug was confirmed as a result?

a. Aliphatic amino group

b. Carboxyl group

c. Ester group

d. Primary aromatic amino group

e. Phenolic hydroxyl

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

a. The need for safety

b. The need for power, success, and affiliation

c. Hygienic and motivational factors

d. The need for existence, connection, growth

e. The need for protection

91. A 54-year-old hypertonic patient undergoing pharmacotherapy developed bronchial spasm. His physician considers it to be a therapy-induced complication caused by the drug that belongs to the following group:

a. beta-adrenergic blockers

b. Calcium antagonists

c. Ganglionic blockers

d. alpha-adrenergic blockers

e. Diuretics

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

a. Saponins

b. Essential oil

c. Iridoids

d. Lipids

e. Vitamins

93. In the process of making an aqueous solution of protargol the pharmacist has used the following technology:

a. Dissolved in warm water

b. Dissolved in purified water in a vial for dispensing

c. Dissolved in cold water

d. Dissolved during comminution

e. Added the powder onto the water surface and waited until complete dissolution

94. Powders made with a certain medicinal substance need to be prepared at a separate workplace, using separate scales and mortar. Name this substance:

a. Xeroform (bismuth tribromphenolate and bismuth oxide complex)

b. Glucose

c. Zinc oxide

- d. Magnesium oxide
- e. Ascorbic acid

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

- a. Payment summary
- b. Cheque payable
- c. Payment request and order
- d. Payment order
- e. Cash cheque

96. A pharmaceutical company produces tablets. Tableting by means of direct compression requires:

- a. Prior homogenization
- b. No prior granulation
- c. Formation of masses
- d. Application of hydraulic press
- e. Prior granulation

97. Who is responsible for the patient's condition in case of self-treatment?

- a. Physician
- b. Head manager of the retail pharmacy
- c. Patient
- d. Drug manufacturer
- e. Pharmacist

98. What type of moisture remains after the herbal raw material is dried?

- a. Free
- b. Residual
- c. Osmotic
- d. Equilibrium
- e. External

99. Inulin improves digestion and has a positive effect on carbohydrate metabolism. What plant is used as a source of inulin?

- a. *Althaea officinalis*
- b. *Astragalus dasyanthus*
- c. *Helianthus tuberosus*
- d. *Brassica juncea*
- e. *Hypericum maculatum*

100. A pharmacist has prepared a compound ointment. What is the correct sequence of its preparation?

- a. Solution - emulsion - suspension
- b. Emulsion - solution - suspension
- c. Solution - suspension - emulsion
- d. Suspension - solution - emulsion
- e. Emulsion - suspension - solution

101. What medicinal substance must fill only 2/3 of the vial before sterilization?

- a. Hexamethylenetetramine
- b. Euphyllin (Aminophylline)
- c. Calcium chloride
- d. Sodium bicarbonate
- e. Sodium chloride

102. The herbal raw material of a foxglove is a source, from which cardiotonic agents are obtained. What organs of the *Digitalis purpurea* are harvested as a herbal raw material?

- a. Rhizomes

- b. Fruits
- c. Roots
- d. Leaves
- e. Seeds

103. Digoxin is given to the patients with chronic heart failure. What medicinal plant that contains cardiac glycoside is a source of this medicinal substance?

- a. *Convallaria majalis*
- b. *Erysimum canescens*
- c. *Digitalis lanata*
- d. *Strophanthus kombe*
- e. *Adonis vernalis*

104. What is the name of the settlement document printed by the registrar of settlement operations, when making settlements for the goods sold or services provided?

- a. Receipt
- b. Sales receipt
- c. Invoice
- d. Settlement receipt
- e. Cash register fiscal receipt

105. What variable of the internal environment of the "Provisor" pharmacy can be described as the ways of transformation of component materials (medicinal agents "an gross") into end product (various dosage forms)?

- a. Tasks
- b. Human resources
- c. Technologies
- d. Mission
- e. Structure

106. A pharmacist has a labour dispute with the pharmacy administration about rescheduling his annual vacation leave. The employee can appeal against the decision of the pharmacy administration to the following body:

- a. Commercial court
- b. Highest management bodies of pharmaceutical service at the regional level
- c. Labour disputes committee (LDC)
- d. Trade union committee
- e. The Ministry of Public Health of Ukraine

107. A 45-year-old man complains of wet cough. He has been suffering from chronic bronchitis for 20 years. The patient is a smoker. He needs a mucolytic agent that will facilitate expectoration and production of surfactant. What drug can be recommended to the patient in this case?

- a. Ambroxol
- b. Licorice root
- c. Proteolytic enzymes
- d. Thermopsis preparations
- e. Potassium iodide

108. A 70-year-old patient with stenocardia claims that the pharmacy had sold him a drug that relieved an attack of stenocardia but instead caused an acute bursting headache. What antihypertensive drug is this side-effect typical of?

- a. Nifedipine
- b. Metoprolol
- c. Nitrosorbid
- d. Trimetazidine
- e. Amlodipine

109. To confirm the presence of sulfate ions in the medicinal preparation of magnesium sulfate an analytical chemist of a pharmacy uses the following solutions:

- a. Diphenylamine
- b. Benzenesulfonic acid
- c. Ammonium chloride and ammonium hydrate
- d. Barium chloride and hydrochloric acid
- e. Silver nitrate and nitric acid

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

- a. Reduced sensitivity
- b. Dysbacteriosis
- c. Bradycardia
- d. Withdrawal syndrome
- e. Bronchospasm

111. Representatives of two pharmaceutical companies - partners from Ukraine and China - for some time had communication problems due to the use of words and verbal symbols with different meanings. What caused the deformation of the communication process and hindered the exchange of information in this case?

- a. Nonverbal barriers
- b. Poor feedback
- c. Lack of understanding of the information's importance
- d. Psychological distance
- e. Semantic barriers

112. Several cholesterol gallstones are detected in the gallbladder of a woman. Choose the drug to dissolve and excrete the stones:

- a. Ursodeoxycholic acid
- b. Platyphyllin
- c. Domperidone
- d. Loperamide
- e. Papaverine

113. Solutions of protected forms of colloids are used in medical practice. What substance is a protected colloid?

- a. Camphor
- b. Basic bismuth nitrate
- c. Protargol
- d. Potassium iodide
- e. Sodium chloride

114. During a practical session in pharmaceutical chemistry, a pharmaceutical student performs quantitative determination of caffeine substance. What method according to the State Pharmacopoeia of Ukraine should be used for this purpose?

- a. Bromometry
- b. Acid-base titration in nonaqueous medium
- c. Cerimetry
- d. Permanganatometry
- e. Complexometric titration

115. Herbal raw material quality depends on the period when it was harvested. Subterranean organs - roots, rhizomes, subterranean tubers - should be harvested:

- a. During the period of vegetation
- b. In early spring or autumn
- c. Before the bloom
- d. During the bloom
- e. At the end of the bloom

116. An analytical pharmacist quantifies the ascorbic acid substance using the iodometric method.



What indicator must be used in the process?

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

117. What should be used by a dispensing chemist-analyst for identification of bismuth-containing medicinal substances?

- a. Potassium permanganate solution
- b. Cobalt nitrate solution
- c. Thiourea solution
- d. Iron(III) sulfate solution
- e. Beta-naphthol solution

118. A 43-year-old woman has come to a pharmacy with complaints of sharp headache in the occipital area, palpitations, "visual snow" in her eyes, nausea; her BP is 180/110 mm Hg. These symptoms correspond with:

- a. Acute conjunctivitis
- b. Cervical osteochondrosis
- c. Exertional angina pectoris attack
- d. Hypertensive crisis
- e. Migraine attack

119. An analytical pharmacist analyzes a chloramphenicol (levomycetin) substance and uses the specific absorption parameter value to calculate its quantitative content. What method was used for quantification in this case?

- a. Refractometry
- b. Spectrophotometry
- c. Photocolorimetry
- d. Polarography
- e. Polarimetry

120. Name the document where the actual hours worked by the pharmacy employees are recorded:

- a. Work schedule
- b. Medical certificate
- c. Payroll
- d. Material aid log book
- e. Employee time sheet

121. What is the function of anhydrous lanolin in the suppository mass used for suppositories prepared via hand rolling?

- a. Preservative
- b. Plasticizer
- c. Emollient
- d. Solubilizer
- e. Solvent

122. Various types of dryers can be used for granule dehumidification. Specify the type of "СП-30" dryer:

- a. Silica gel dryer
- b. Fluidized bed dryer
- c. Infrared dryer
- d. Freeze dryer
- e. Forced air dryer

123. Suspension stability increases, when the substances that increase the viscosity of a continuous medium are introduced to a suspension. Specify a substance that has such a property:

- a. Atropa belladonna tincture

**b. Glycerine**

- c. Purified water
- d. Dimexide (dimethyl sulfoxide)
- e. Ethyl alcohol

124. Preparations of Panax roots have tonic and adaptogenic properties and improve mental and physical working ability. If there is no Panax tincture in the pharmacy, it can be substituted with preparations of:

- a. Calami radices

**b. Araliae mandshuricae radices**

- c. Taraxaci radices
- d. Glycyrrhizae radices
- e. Tormentillae radices

125. What is the medicine of choice for treatment of acute pyelonephritis in a woman, who is at the I trimester of her pregnancy?

- a. Amoxicillin
- b. Gentamicin
- c. Co-trimoxazole
- d. Norfloxacin
- e. Ofloxacin

126. The phytochemical workshop of a factory produces extraction preparations. For what purpose are concentrated extracts used?

- a. For preparation of dry extracts
- b. To be used as ready-made medicines
- c. For preparation of tinctures
- d. For preparation of thick extracts

**e. For quick preparation of infusions and decoctions in pharmacy practice**

127. A woman with diabetes mellitus has injected herself with 30 units of insulin. After that she developed weakness and came to the pharmacy to ask for help. In the pharmacy she lost her consciousness and developed convulsions. What should she be given immediately?

- a. Metformin

**b. Glucose**

- c. Butamide (Tolbutamide)
- d. Insulin
- e. Glibenclamid

128. A doctor prescribed the drug simvastatin to the patient to correct hyperlipidemia. Why should the selected daily dose be taken once in the evening?

- a. Catabolism rate of low-density lipoproteins increases
- b. Absorption of the drug increases at night
- c. Risk of myopathy decreases
- d. Receptor sensitivity to low-density lipoproteins increases

**e. Cholesterol biosynthesis occurs mainly at night**

129. A doctor has asked a dispensing chemist for consultation on free dispensation of medicines. What free drugs can the doctor prescribe to an epileptic patient for outpatient treatment?

- a. Only drugs produced domestically

**b. Only the drugs from the list of approved procurements for budget-financed healthcare facilities**

- c. Only imported drugs
- d. Any drugs registered for distribution in Ukraine
- e. Only vital drugs

130. To check the authenticity of Helichrysum arenarium flowers, magnesium powder and concentrated HCl were added to the extract obtained from the herbal raw material. What class of compounds is indicated in this case, if this reaction produces a red coloring?

- a. Flavonoids

- b. Polysaccharides
- c. Tannins
- d. Vitamins
- e. Alkaloids

131. What antibacterial drug is most effective against chronic gastritis associated with *Helicobacter pylori* infection?

- a. Lincomycin
- b. Co-trimoxazole
- c. Levomycetin (Chloramphenicol)
- d. Ceftriaxone
- e. Clarithromycin**

132. To identify cardiac glycosides there are usually three groups of color reactions being performed: for steroid nucleus, for lactonic ring, and for carbohydrate component. Specify the reaction for identification of butenolide ring:

- a. Mayer's test
- b. Reaction of sublimation
- c. Dragendorff's test
- d. Legal's test**
- e. Stahl's reaction

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

- a. Flavonoids
- b. Fatty oil
- c. Polysaccharides
- d. Alkaloids
- e. Thioglycosides**

134. Pharmacological properties and bioavailability of drugs is determined by their chemical structure. What medicinal substance contains simultaneously a carboxyl group and an ester group?

- a. Benzoic acid
- b. Sodium benzoate
- c. Salicylic acid
- d. Phenyl salicylate
- e. Acetylsalicylic acid**

135. A pharmacist needs to prepare eyedrops with pilocarpine hydrochloride. Specify the optimal isotonic agent in this case:

- a. Glucose
- b. Sodium chloride**
- c. Boric acid
- d. Sodium sulfate
- e. Sodium nitrite

136. A "Sunrise" pharmacy chain has changed the placement of medical products on its shelves and in the shop windows, to study what effect would this merchandising tactics have on the sales amount. What method of marketing research was used by this pharmacy chain?

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

137. After lifting a load, a man developed sharp lumbar pain that intensifies during movements and radiates into the left leg. The patient was diagnosed with lumbosacral radiculopathy. What drug can be recommended in this case?

- a. Enterosgel

- b. Cyanocobalamin
- c. Diclofenac sodium
- d. Drotaverine hydrochloride
- e. Atropine sulfate

138. A domestic pharmaceutical company introduces to the market a generic drug at a significantly lower price than its imported brand name counterparts. What pricing strategy has this domestic company chosen?

- a. Tender pricing strategy
- b. "Skim-the-cream" strategy
- c. Deep penetration into the market
- d. Following the leader
- e. -

139. 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

140. According to the State Pharmacopoeia of Ukraine regulations, valine amino acid should be identified by means of thin-layer chromatography. To develop a chromatogram, the following reagent should be used:

- a. 2,4-Dinitrochlorobenzene
- b. 2,4-Dinitrophenylhydrazine
- c. Cyanogen bromide
- d. Ninhydrin
- e. Concentrated ammonia

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

- a. Glucocorticosteroids
- b. Inhibitors of protein-degrading enzymes
- c. Alpha-blockers
- d. Proton pump inhibitors
- e. Beta-blockers

142. A woman with diabetes mellitus has developed hypoglycemia after insulin overdose. What measures should be taken at the first signs of hypoglycemia?

- a. Make an insulin injection
- b. Introduce 0.1% adrenaline solution subcutaneously
- c. Make an intramuscular injection of caffeine
- d. Give nitroglycerine sublingually
- e. Give the patient a sugar lump to eat and a cup of warm sweetened tea

143. According to the State Pharmacopoeia of Ukraine quantitative content of salicylic acid is to be determined by means of:

- a. Nitritometric titration
- b. Complexometric titration
- c. Alkalimetry
- d. Acidimetry
- e. Argentometry

144. The management of a pharmaceutical company takes into account the presence of informal groups within the organization. What is characteristic of informal groups?

- a. Resist changes in the organization
- b. Have a clear formal structure

- c. -
- d. Are formed for the implementation of the manufacturing process
- e. Are formed upon the request of the head of the organization

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

- a. 7%
- b. 25%
- c. 5%
- d. 10%
- e. 15%

146. According to the State Pharmacopoeia of Ukraine, phthalylsulfathiazole is quantitatively determined by means of alkalimetry in non-aqueous medium. The following substance is used as a solvent in this case:

- a. Anhydrous acetic acid
- b. Chloroform
- c. Dimethyl formamide
- d. Benzene
- e. Ethyl alcohol

147. A pharmaceutical company focuses on selling a diverse range of products covering different customer groups and regions. What kind of organizational structure is typical for such company?

- a. Divisional
- b. Decentralized
- c. Functional
- d. Centralized
- e. Bureaucratic

148. Cross-section of the leaf of a medicinal plant shows cystoliths and stinging hairs with a multicellular base and a large cell on the apex that ends in a widened tip that breaks off. What herbal raw material has such microscopic characteristics?

- a. *Atropa belladonna*
- b. *Capsella bursa-pastoris*
- c. *Urtica dioica*
- d. *Mentha piperita*
- e. *Origanum vulgare*

149. Optical rotation angle of substances is determined under the temperature of 20°C, in 1-decimeter-thick layer, with wavelength of sodium spectrum D-lines ( $\lambda = 589,3 \text{ nm}$ ), and is calculated with reference to a solution containing 1 g of the substance per ml. It is called:

- a. Optical density
- b. Specific optical rotation
- c. Refractive index
- d. Relative density
- e. Distribution coefficient

150. A pharmaceutical warehouse received a herbal raw material that consists of "cones" with loose scales that are attached to a firm twig with or without fruits. Its collective fruits are pale green, fragrant, and bitter. Name the plant from which this herbal raw material was harvested:

- a. *Olea europaea*
- b. *Alnus incana*
- c. *Humulus lupulus*
- d. *Juniperus communis*
- e. *Rubus idaeus*

151. Chloride of lime is identified by calcium cations after boiling with acetic acid in order to eliminate active chlorine. What reagent is used?

- a. Magnesium sulfate
- b. Ammonium molybdate

- c. Sodium nitrite
- d. Ammonium oxalate
- e. Potassium chloride

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

- a. Esteem
- b. Self-actualisation
- c. Social (involvement in the events)
- d. Safety and protection
- e. Physiological

153. Advertising is the most popular and widely used part of marketing communications system. What cannot be included into the advertisements for medicines?

- a. Objective information about the medicines, presented in such a way that the advertising nature of the message is obvious to the consumers
- b. Full pharmacological name of the medicine and the name of its manufacturer
- c. Claims that the effect of the medicines is guaranteed
- d. General warnings about the usage of medicines and medical products
- e. Recommendation to always read the instructions for the medicines

154. Accounts receivable develop in the process of pharmaceutical company work. Specify where in the balance book they are recorded:

- a. Assets
- b. Liabilities
- c. Debit
- d. Account
- e. Credit

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

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

156. Who is responsible for the acceptance of goods and medical products with accompanying incoming quality control?

- a. Authorized representative
- b. Analyst
- c. Dispensing chemist
- d. Supplier pharmacist
- e. Pharmacy head manager

157. A marketing study found that the main group of consumers of venotonics are women aged 40 to 60 years. What principle is used for market segmentation in this case?

- a. Behavioral approach
- b. Geographical approach
- c. Demographic approach
- d. Psychographic approach
- e. -

158. An analytical chemist performs collargol identification by means of ashing. Obtained residue is then dissolved in hydrochloric acid. Specify the analytical effect that is observed in this case:

- a. Yellow precipitate
- b. Black precipitate
- c. White precipitate
- d. Light green precipitate

e. Blue precipitate

159. For better coverage of various markets the Lubnyfarm company sells a portion of its production through its chain of pharmacies, another portion is being sold through distributors, and the third - through pharmacies of another owners. What marketing system of distribution is used by this company?

- a. Contractual
- b. Administered
- c. Horizontal
- d. Corporate

e. Multichannel

160. Collective labour agreement is concluded by a trade union committee with the business owner on behalf of the workforce. Any collective agreement is worked out in written form. Which article of the Labour Code regulates the duration of the collective agreement?

- a. 36
- b. 17
- c. 38
- d. 40
- e. 41

161. A pharmacist at the extemporaneous compounding department of a pharmacy has prepared 100 mL of an infusion of Leonurus grass. What amount of the herbal raw material and purified water is necessary to prepare this infusion, if water absorption coefficient is 2.0?

- a. 0.25 g and 100 mL
- b. 10.0 g and 120 mL
- c. 20.0 g and 140 mL
- d. 10.0 g and 100 mL
- e. 5.0 g and 110 mL

162. Which of the following antibiotics can be identified by means of maltol test?

- a. Amoxicillin
- b. Doxycycline hydrochloride
- c. Kanamycin monosulfate
- d. Streptomycin sulfate
- e. Lincomycin hydrochloride

163. What is the purpose of injectable tablets?

- a. Obtaining solutions for various pharmaceutical purposes
- b. Sublingual use
- c. Oral use
- d. Implantation

e. Obtaining injectable solutions

164. A pharmaceutical company produces various medicines. Name the dosage form consisting of separate hard dry particles disintegrated to varying degree:

- a. Powders
- b. Suspensions
- c. Emulsions
- d. Tablets
- e. Dried extract

165. A patient diagnosed with acute rhinitis was using xylometazoline drops. After 7 days of treatment, the patient notes that the effect of the medicine decreased and was not restored after an increase in the dosage. What medical term characterizes a sudden decrease in the sensitivity to a medicine?

- a. Antagonism
- b. Tolerance
- c. Withdrawal syndrome

d. Synergism

**e. Tachyphylaxis**

166. The quality control analytical laboratory analyzes a medicine with sodium benzoate. What reagent will form a pink-yellow precipitate with the medicine being analyzed?

a. Potassium permanganate solution

b. Sodium nitrate solution

**c. Iron(III) chloride solution**

d. Magnesium sulfate solution

e. Sodium bicarbonate solution

167. An analytical chemist conducts a thiochrome formation reaction to identify thiamine bromide. What reagent should be used in this case?

a. Sodium hydroxide

**b. Potassium ferrocyanide**

c. Iron(II) sulfate

d. Potassium bromide

e. Calcium chloride

168. A pharmaceutical company lowered its price for a certain drug due to strong competition and decreasing demand for this drug. What is the purpose of such price policy?

**a. To ensure business survival**

b. To maximize profits

c. To gain leadership due to high quality of manufactured medicines

d. To create the image of high-quality medicine manufacturer

e. -

169. An analytical chemist investigates a 3% hydrogen solution. What reagent is recommended by the State Pharmacopoeia of Ukraine for identification of this substance?

a. Sodium chloride

b. Calcium chloride

c. Magnesium sulfate

**d. Potassium chromate**

e. Zinc oxide

170. What side effect is observed in cases of long-term use of digoxin?

a. Hypertension

b. Hypokalemia

c. Constipation

**d. Bradycardia**

e. Hypotension

171. Tell the patient, what side effect is associated with systemic glucocorticosteroid therapy.

a. Hypoglycemia

b. Jaundice

**c. Osteoporosis**

d. Hypotension

e. Constipation

172. Who determines the amount of cash that may remain in the cash register at the end of a workday?

a. The National Bank of Ukraine

b. A revenue and duties authority

c. The company itself

d. A statistics authority

e. The Ministry of Finance

173. Proper harvesting of *Frangula alnus* herbal raw material greatly influences the quality and quantity of its active substances. Therefore the optimal time for buckthorn bark harvesting is the



period of:

- a. Defoliation
- b. Sap flow**
- c. Fruiting
- d. Flowering
- e. Dormancy

174. A pharmacist needs to make a 5% sodium bicarbonate solution for injections. What is the optimum temperature for sodium bicarbonate dissolution that allows avoiding its forceful stirring?

- a. 15-20°C**
- b. 25-35°C
- c. 30-45°C
- d. 80-100°C
- e. 45-55°C

175. Tussilago farfara leaves are a component of drugs that exhibit coating, expectorant, and softening effect. What class of bioactive substances determines such pharmacological characteristics of this raw material?

- a. Vitamins
- b. Phenolic glycosides
- c. Essential oils
- d. Saponins
- e. Polysaccharides**

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

- a. Herbal antiseptics
- b. Mucolytics
- c. Inhaled muscarinic antagonists
- d. Inhaled glucocorticosteroids**
- e. Inhaled beta<sub>2</sub>-adrenergic agonists

177. One of the most important market characteristics is a goods economic trend. What economic trend can be characterized by relative stability of high prices and the highest activity of manufacturers and customers?

- a. Downward
- b. Sluggish
- c. Low
- d. Subsiding
- e. High (stable)**

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

- a. Menthol should be introduced as a suspension into the prepared emulsion
- b. Menthol should be comminuted with the emulsifier
- c. Menthol should be dissolved in the purified water
- d. Menthol should be dissolved in oil**
- e. Menthol should be comminuted in a mortar with ethanol

179. Senna leaves decoction is being prepared in a pharmacy. The following is characteristic of the process of making an aqueous infusion of senna leaves:

- a. Infusion is made and acidated with hydrochloric acid
- b. Infusion is made by means of cold maceration
- c. Infusion is made in a slightly alkaline medium
- d. Decoction is made and filtered after complete cooling**
- e. Decoction is made and filtered immediately without cooling

180. A 53-year-old woman suffers from ischemic heart disease and angina pectoris. What drug can be

used to stop angina pectoris attacks?

- a. Dipiridamol
- b. Nitroglycerine**
- c. Acetylsalicylic acid
- d. Drotaverine hydrochloride
- e. Propranolol

181. The <<Violet>> pharmacy chain operates in the pharmaceutical market for over 20 years. In difficult market environment, the company's management actively uses elements of crisis management, diversification, and attraction of investments. What component of the successful activity of the pharmaceutical organization does the company provide?

- a. Survival**
- b. Productivity
- c. Effectiveness
- d. Practical implementation of management decisions
- e. Efficiency

182. During identification these active substances form precipitates in gelatin and alkaloid solutions and produce precipitates with heavy metal salts. These active substances are:

- a. Iridoids
- b. Glycosides
- c. Carbohydrates
- d. Lipids
- e. Tannins**

183. What drug, due to beta-lactam ring in its structure, has positive reaction with hydroxylamine hydrochloride solution in the presence of sodium hydroxide with subsequent addition of iron (III) chloride solution?

- a. Dibazol (Bendazol)
- b. Phenazone
- c. Papaverine hydrochloride
- d. Amoxicillin trihydrate**
- e. Metronidazole

184. A pharmacist has prepared an ascorbic acid solution for injections. What stabilizer was used in this case?

- a. Boric acid
- b. 0.1 M solution of hydrochloric acid
- c. Weibel stabilizer
- d. 0.1 M solution of sodium hydroxide
- e. Sodium sulfite**

185. Which of the following diuretics textbfSHOULD NOT be given to the patients with impaired hearing?

- a. Indapamide
- b. Clopamide
- c. Furosemide**
- d. Spironolactone
- e. Chlorthalidone

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

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

187. At what cost will protargol nasal drops be dispensed at a pharmacy if a pediatrician prescribes it

for treatment of a 2-year-old child?

- a. With 30% discount
- b. At full cost
- c. With 70% discount
- d. With 50% discount
- e. Free of charge

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

- a. Ensuring rapid mechanical destruction of the tablets in a liquid medium
- b. Improvement of the granulation process
- c. Obtaining tablets of the required weight
- d. Making it easier to push the tablets out of the matrix
- e. Taste improvement

189. A pharmaceutical company develops the manufacture of new products. What part of the production procedures contains the description of the end product and lists its physical and chemical properties?

- a. Information materials
- b. Characteristics of the raw stock, materials, and intermediate products
- c. Characteristics of the end product
- d. Description of the manufacturing process
- e. Characteristics of the auxiliary raw stock and materials

190. A patient, who has been taking an expectorant, has developed complaints of hypersalivation, rhinitis, and itching skin rashes (signs of iodism). What medicine can cause these side effects?

- a. Ambroxol syrup
- b. Potassium iodide
- c. Ammonium chloride
- d. Mucaltin
- e. Infusion of Thermopsis grass

191. An analytical pharmacist analyzes a cefazolin sodium substance. What solution is used for identification of sodium ions?

- a. Barium chloride solution
- b. Potassium pyroantimonate solution
- c. Sodium nitrite solution
- d. Magnesium sulfate solution
- e. Ammonium oxalate solution

192. According to the State Pharmacopoeia of Ukraine, the herbal raw material used in production of plantaglucide should be tested by means of thin-layer chromatography. The resulting chromatogram will have a weak blue zone, which will indicate the presence of:

- a. Atropine
- b. Acteoside
- c. Aucubin
- d. Azulene
- e. Acorone

193. What reagent can confirm that alanine is an alpha-amino acid?

- a. Sulfuric acid solution
- b. Sulfosalicylic acid solution
- c. Ninhydrin solution
- d. Barium hydroxide solution
- e. Saturated sodium bicarbonate solution

194. A patient complaining of stuffy nose, fatigability, and headache came to a dispensing chemist. What medicine should be recommended to treat stuffy nose in this case?

- a. Lactulose
- b. Paracetamol

- c. Dexamethasone
- d. Acyclovir

e. Xylometazoline

195. Production of tablets requires stage-to-stage quality control. What devices are used to determine the particle size distribution (fraction) of granules?

- a. Microscope
- b. Standard set of sieves
- c. Friabilators
- d. Various vibrosieves
- e. Laboratory identifiers

196. One of the numerical parameters of herbal raw material quality is the amount of extractive substances that can be measured using:

- a. Biological standardization
- b. Chromatography
- c. Gravimetry
- d. Spectrophotometry
- e. Titrimetry

197. Injection solutions are being produced in an ampoule workshop. Injection solution of ascorbic acid belongs to the following group of solutions:

- a. Solutions of the substances that need special purification
- b. Easily oxidized solutions
- c. Solutions of the salts formed by weak bases and strong acids
- d. Solutions of the substances that cannot be thermally sterilized
- e. Solutions of the salts formed by strong bases and weak acids

198. What department of a pharmaceutical wholesaler analyzes the demand for medicines and implements measures to stimulate their sales?

- a. Marketing
- b. Storage
- c. Transport
- d. Automated accounting
- e. Procurement

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

- a. Inulin
- b. Slime
- c. Fatty oils
- d. Pectin
- e. Essential oils

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

- a. Aldehyde group
- b. Carboxylic group
- c. Ketone group
- d. Esther group
- e. Sulfamide group

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

- a. Souvenir advertising
- b. Film advertising
- c. Point-of-sale advertising

- d. Print advertising
- e. Out-of-home advertising

202. Agar-agar is used as a detoxifying absorbent and the basis of a nutrient medium for growing microorganisms. What class of bioactive substances does it belong to?

a. Polysaccharides

- b. Coumarins
- c. Flavonoids
- d. Vitamins
- e. Iridoids

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

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

204. An analytical quality control laboratory analyzes a resorcinol substance. What method is used for its quantitative determination?

- a. Nitritometry
- b. Complexometric titration
- c. Bromometry
- d. Argentometry
- e. Mercurimetry

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

a. Excise tax

- b. Commercial patent
- c. Single tax
- d. Income tax
- e. Individual income tax

206. 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. Ascorbic acid
- b. Tocopherol acetate
- c. Retinol acetate
- d. Ergocalciferol
- e. Vicasol (Menadione)

207. 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. Cefuroxime

b. Levofloxacin

- c. Amoxicillin
- d. Clarithromycin
- e. Benzylpenicillin sodium salt

208. According to the State Pharmacopoeia of Ukraine, to identify glucose solution for injections, its optical rotation angle should be measured. What chemophysical method is used in such cases?

- a. Thin-layer chromatography
- b. Nuclear magnetic resonance spectroscopy
- c. Polarimetry
- d. Refractometry
- e. Infrared spectroscopy

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

- a. Because of decreased surface tension between the solution and the microbial cell
- b. Only because preservatives were added into the syrup
- c. Because of low pH
- d. Because osmotic pressure in the solution is higher than in the microbial cell**
- e. Because of high pH

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

211. 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. Markups
- c. Profit
- d. Expenses
- e. Profitability**

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

- a. Vortex filling
- b. Vacuum filling
- c. Syringe filling**
- d. Chamber filling
- e. Ultrasonic filling

213. The chemical name of 5-Nitro-8-hydroxyquinoline corresponds with the following drug:

- a. Chingamin (Chloroquine)
- b. Nitroxoline**
- c. Quinocide
- d. Dibazol (Bendazol)
- e. Ofloxacin

214. A man with arterial hypertension has blood pressure of 160/100 mm Hg and heart rate of 64/min. and presents with signs of fluid retention (pastose shins, dyspnea, etc.). What hypotensive agent is the drug of choice in case of edema syndrome?

- a. Hydrochlorothiazide**
- b. Losartan
- c. Metoprolol
- d. Amlodipine
- e. Enalapril

215. There are six types of intra-pharmacy control. Which of them requires determination of total mass or volume of a dosage form, as well as the number of doses and the mass of each dose?

- a. Chemical control
- b. Survey control
- c. Organoleptic control
- d. Physical control**
- e. Written control

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

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

217. 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

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

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

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

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

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

- a. Hydrolysis
- b. Hydroxylation
- c. Oxidation
- d. Reduction
- e. Phosphorylation**

221. Accounting records are classified by the type of asset accounting or by their sources. Active accounts keep record of the following:

- a. Debt settlement with the creditors
- b. Monetary funds**
- c. Salaries payment
- d. Equity capital
- e. Bank loans

222. Powders are a solid dosage form for internal or external use. What stage is textbfNOT a part of powder production?

- a. Mixing
- b. Comminution
- c. Sifting
- d. Packing
- e. Granulation

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

- a. Magnesium sulfate solution
- b. Sodium nitrate solution
- c. Copper (II) sulfate solution
- d. Iron (III) chloride solution**

e. Potassium bromide solution

224. 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

225. 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

226. 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. *Urtica dioica* folium
- b. *Digitalis purpurea* folium
- c. *Hyoscyamus niger* folium
- d. *Gnaphalium uliginosum* herba

e. *Althaea officinalis* herba

227. 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

228. A pharmacy receives centralized deliveries of goods from the warehouse. Specify the document that is textbfNOT NECESSARY for accounting of goods receipt by the pharmacy:

- a. Goods received record book by item and supplier
- b. Goods report (Inventory change report)
- c. Goods received record book by groups of goods
- d. Cash receipt order
- e. Financial operating report of the pharmacy

229. The "Bon-pharn" pharmaceutical company due to its constant financial support of international sports competitions became well-known in Ukraine and the neighbouring countries. What type of activity is described in this case?

- a. Direct marketing
- b. Publicity
- c. Lobbying
- d. Product promotion

e. Sponsorship

230. 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

231. Analysis of sales volume of a certain drug shows that the drug is being manufactured in large batches and sales volume grows. However, the growth rate gradually slows down and the number of competitors increases. What stage of product life cycle is it?

- a. Development
- b. Decline
- c. Introduction
- d. Maturity
- e. Growth

232. To identify an alkaloid drug, an analytical chemist used the reaction that produces purple-red murexide. What substance can be identified using this reaction?

- a. Papaverine
- b. Morphine
- c. Codeine
- d. Caffeine
- e. Atropine

233. What medicinal substance can be identified using hydroxamic test?

- a. Bendazol
- b. Nicotinic acid
- c. Aceclidine
- d. Metronidazole
- e. Nitroxoline

234. 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

235. 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  $-48^{\circ}$  to  $-51^{\circ}$
- c. From  $+10^{\circ}$  to  $+13^{\circ}$
- d. From  $-102^{\circ}$  to  $-105^{\circ}$
- e. From  $+50^{\circ}$  to  $+56^{\circ}$

236. The reaction of glucose identification produces red precipitate with the following reagent:

- a. Ammoniacal silver nitrate solution
- b. Alkaline potassium tetraiodomercurate solution
- c. Sodium nitroprusside solution
- d. Copper-tartrate
- e. Thiocyanogen bromide

237. Preparations of sorrel roots can have both a laxative and astringent effect. This is due to the presence of the following biologically active substances:

- a. Coumarins and phenol glycosides
- b. Anthracene derivatives and tannins
- c. Essential and fatty oils
- d. Iridoids and vitamins
- e. Flavonoids and essential oils

238. After a surgery, a man was receiving promedol (trimeperidine) for a long time. When this drug was discontinued, the patient developed psychic and somatic disturbances. What phenomenon is it?

- a. Rebound effect
- b. Steal syndrome
- c. Tachyphylaxis
- d. Withdrawal syndrome
- e. Idiosyncrasy

239. A patient receives heparin for acute myocardial infarction. On the third day the patient developed hematuria and subcutaneous hematomas. What medicine should be prescribed as an antidote in this case?

- a. Protamine sulfate
- b. Streptokinase
- c. Acetylsalicylic acid
- d. Vicasol (Menadione)
- e. Clopidogrel

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

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

241. A pharmaceutical company produces various types of tablets. Specify the structure of matrix tablets:

- a. Tablets covered in a film coating
- b. A dispersion of medicinal substances in polyethylene
- c. Tablets with a dragee coating
- d. Tablets covered in a fat-soluble coating
- e. A reticular matrix that contains the medicinal substance

242. For 2 weeks, a pharmacy network has been holding a lottery among its visitors who have purchased over 200 UAH worth of medicines. What set of marketing activities does the pharmacy network use in this case?

- a. Personal selling
- b. Lobbying
- c. Advertising
- d. Sales promotion
- e. Public relations

243. A pharmaceutical company that has been producing nasal drops begins to produce the same drug in a spray dosage form. What marketing approach does this company choose in its relationship with customers?

- a. Socioethical marketing
- b. Sales improvement
- c. Intensification of commercial effort
- d. Product improvement
- e. Manufacture improvement

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

- a. 1 month
- b. 5 weeks
- c. 3 weeks
- d. 2 weeks
- e. 5-7 days

245. 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. Atropine sulfate
- c. Codeine phosphate
- d. Morphine hydrochloride
- e. Papaverine hydrochloride

246. A pharmacy has received a prescription, written in an incorrect format. In this case, the dispensing chemist, tasked with the incoming control of the prescriptions, must do the following:

- a. Register the prescription in the log book and sell this medicine to the patient
- b. Give the patient a copy of the prescription
- c. Sell this medicine to the patient
- d. Affix the <<Invalid prescription>> stamp to the prescription and return it to the patient
- e. Notify the head manager of the pharmacy

247. 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. Referent
- d. Centralized
- e. Specialized

248. Aqueous lanolin consists of:

- a. 5 parts of anhydrous lanolin and 95 parts of water
- b. 80 parts of anhydrous lanolin and 20 parts of water
- c. 90 parts of anhydrous lanolin and 10 parts of water
- d. 50 parts of anhydrous lanolin and 50 parts of water
- e. 70 parts of anhydrous lanolin and 30 parts of water

249. During an asphyxiating attack the patient with bronchial asthma was given intravenously a drug that caused nausea, headache, excitation, and palpitations as side effects. What drug can cause such reaction?

- a. Papaverine hydrochloride
- b. Prednisolone
- c. Suprastin (Chloropyramine)
- d. Euphylline (Aminophylline)
- e. Ambroxol

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

- a. Wax paper
- b. Container with a lid that has holes in it
- c. Ordinary paper capsules
- d. Gelatin capsules
- e. Parchment

251. During H. pylori eradication quadrotherapy, a 25-year-old man developed black feces. What medicine provoked such a side effect in this case?

- a. Omeprazole
- b. Amoxicillin
- c. Bismuth subcitrate
- d. Tetracycline
- e. Metronidazole

252. 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. Saponins
- d. Flavonoids**
- e. Coumarins

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

- a. Faster absorption of the drug
- b. Prolongation of the effect of iron preparations
- c. Formation of poorly soluble chelate complexes**
- d. Increased activity of the drug
- e. Accelerated elimination of the drug

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

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

255. A patient with angina pectoris takes long-acting nitrates. Consult him what side-effect is the most common for these drugs:

- a. Constipation
- b. Headache**
- c. Vomiting
- d. Nausea
- e. Diarrhea

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

- a. K-Strophanthin
- b. Purpurea glycosides A and B**
- c. Atropine and hyoscyamine
- d. Convallatoxin
- e. Lanatosides A and B

257. 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

258. The marketing team of a pharmaceutical company has calculated the coefficient of elasticity of the demand for medical products, which is equal to 1. What type of elasticity of the demand is it?

- a. Unitary**
- b. Inelastic
- c. Perfectly inelastic
- d. Perfectly elastic
- e. Elastic

259. A pharmaceutical factory uses maceration technique to produce tinctures. How long must herbal raw materials be steeped according to this technique?

- a. 5 days
- b. 12 hours
- c. 7 days**

- d. 24 hours
- e. 2 days

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

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

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

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

- a. Dysbiosis
- b. Bradycardia
- c. Constipation**
- d. Elevated blood pressure
- e. Osteoporosis

263. A pharmaceutical company produces biogenic stimulants. In the course of manufacturing process the raw materials are being subjected to adverse conditions. What is the purpose of this procedure?

- a. Extending the shelf life of raw materials
- b. Formation of biostimulants**
- c. Acceleration of bioactive substances extraction
- d. Reducing the content of ballast substances
- e. Prevention of hydrolysis of bioactive substances

264. A doctor has written the following prescription for the preparation of a dosage form: Unguenti Benzylpenicillini-natrii 10.0 Misce. Da. Signa: Apply under the eyelid 3 times a day endtabular. What base should be used to make this ointment?

- a. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (5:5)
- b. 10.0 of vaseline (petroleum jelly) "for eye ointments"
- c. A mixture of paraffin and sunflower oil (3:7)
- d. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (6:4)**
- e. A mixture of vaseline (petroleum jelly) "for eye ointments" and anhydrous lanolin (7:3)

265. A pharmacy must be closed during inventory-taking. How long can this process take?

- a. No more than 3 days**
- b. No more than 6 days
- c. No more than 10 days
- d. No more than 14 days
- e. No more than 7 days

266. 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. Cumulation
- b. Tolerance
- c. Physical dependence

- d. Sensitization
- e. Psychological dependence

267. The "Aromeline" phytodrug exhibits P-vitamin activity. What herbal raw material is used in production of this drug?

- a. Fructus Crataegi
- b. Fructus Sambuci nigrae
- c. Fructus Aroniae melanocarpae**
- d. Fructus Sorbi
- e. Fructus Viburni

268. A herbal mix contains Cortex Frangulae, Folia Urticae, and Herba Millefolii. Name the characteristic microscopic features that allow identification of Folia Urticae herbal raw material:

- a. Bast fibers, tracheids, starch, vessels
- b. Many-armed, two-armed, and simple hairs
- c. Simple capitate hairs
- d. T-shaped hairs along the leaf margin
- e. Capitate, flask-shaped, and stinging hairs; cystoliths; vessels of the conducting bundle, veins, druses of calcium oxalate

269. A thymol-containing herbal raw material is stored in the warehouse of a pharmaceutical company. What are its proper storage conditions?

- a. Under the temperature of  $-5^{\circ}\text{C}$
- b. Under  $\text{CO}_2$ -free conditions
- c. Under normal conditions
- d. Separate from the others**
- e. In metal containers

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

271. According to ecological survey, a certain pharmaceutical manufacturer holds the first place among the local "green" industries. What marketing concept is chosen by this manufacturer in relations with its customers?

- a. Integrated marketing
- b. Intensification of commercial effort
- c. Product development
- d. Socio-ethical marketing**
- e. Production development

272. Bromatometry allows quantitative analysis of the following drug:

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

273. 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. Sodium hydroxide solution**
- c. Potassium bromate solution
- d. Hydrochloric acid solution
- e. Sodium thiosulfate solution

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

- a. Dispersion with stirring
- b. Chemical condensation
- c. Solvent replacement method
- d. Continental method
- e. Physical condensation

275. An analytical pharmacist detects a primary aromatic amino group in the structure of benzocaine (anesthesine). What compound would the pharmacist use for identification?

- a. Azo dye
- b. Murexide
- c. Iodoform
- d. Indophenol
- e. Fluorescein

276. Gastroduodenopathies are one of the most common complications of pharmacotherapy during treatment with nonsteroidal anti-inflammatory drugs. What statement correctly describes the cause of their development?

- a. Disturbed pain impulse conduction
- b. Inhibition of neutrophil aggregation
- c. Inhibition of lipid peroxidation
- d. Inhibition of platelet adhesion and aggregation
- e. Inhibition of prostaglandin synthesis in the mucosa

277. Doctor's prescription fulfills several functions. What function indicates that the doctor bears responsibility for correct prescription of medicines to the patient?

- a. Social
- b. Technological
- c. Informational
- d. Economic
- e. Legal

278. 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

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

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

280. 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. Phenazone
- e. Ampicillin

281. 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. Lisinopril

- b. Atorvastatin
- c. Hydrochlorothiazide
- d. Nifedipine
- e. Nitroglycerine

282. Herbal mixtures contain several types of comminuted or non-comminuted herbal raw material. What stage is NOT a part of herbal mixture production?

- a. Sifting
- b. Packing
- c. Extraction
- d. Mixing
- e. Marking

283. A pharmacy needs to prepare a furacilin (nitrofurantoin) solution (1:5000). What are the specifics of furacilin dissolution?

- a. In the cold purified water
- b. In the minimal amount of ethanol
- c. In the purified water, filtered in advance
- d. In the purified water, after grinding it down
- e. In the boiling water in the presence of sodium chloride

284. A company manager analyzes, how effectively the available material assets are used, and identifies and eliminates the deviations arising in the course of work. What type of control is it?

- a. Financial
- b. Preliminary
- c. -
- d. Current
- e. Final

285. A 48-year-old woman, who undergoes a prolonged treatment for chronic hepatitis, was diagnosed with pneumonia. What antibacterial agent should she be prescribed in this case?

- a. Biseptol (Co-trimoxazole)
- b. Streptomycin
- c. Rifampicin
- d. Tetracycline
- e. Amoxicillin

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

- a. Potassium chromate
- b. Bromphenol blue
- c. Starch
- d. Sodium eosinate
- e. Iron (III) ammonium sulphate

287. Throughout the year, three employees voluntarily resigned from a pharmaceutical company. What type of employee movement is it?

- a. Staff turnover
- b. Recruiting
- c. -
- d. Horizontal job rotation
- e. Vertical job rotation

288. During visual inspection of a product, the authorized person developed doubts about the quality of the received medicines. What should the authorized person do, to initiate the laboratory testing of the medicine quality?

- a. Send the medicines back to the supplier
- b. Send the medicines to the nearest compounding pharmacy that employs a dispensing chemist
- c. Send the medicines back to the manufacturer



d. Send the medicines to the Ministry of Health of Ukraine

e. Send the medicines to a local laboratory of the State Drugs and Medications Control Service

289. 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. Pure monopoly market

b. Oligopolistic market

c. -

d. Market with pure (free) competition

e. Limited monopoly market

290. A pharmacy opens a bank account to store funds and conduct ongoing business transactions. What kind of account should be opened?

a. Current

b. Deposit

c. Letter of credit

d. Investment

e. Provisional

291. What method of analysis takes into account the strengths and weaknesses of a pharmaceutical company, as well as opportunities and threats at the pharmaceutical market, in order to determine marketing goals, strategies, and specific measures that would make it possible to adapt the company's potential to market trends and conditions?

a. VEN analysis

b. ABC analysis

c. SWOT analysis

d. Meta-analysis

e. XYZ analysis

292. Analysis of work environment of a pharmaceutical company has detected there the following organizational features: dynamism, flexibility of management structure, self-checking, and democratic communication. What type of adaptive organization structure is it?

a. -

b. Organic

c. Combined

d. Informal

e. Mechanistic

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

a. Mentha

b. Hypericum

c. Styphnolobium japonicum

d. Atropa belladonna

e. Leonurus

294. A patient came to a pharmacy to buy a herbal antidepressant containing condensed anthracene derivatives and flavonoids. What herbal raw material is used to make this drug?

a. Hyperici herba

b. Uvae ursi folia

c. Rhodiolae roseae rhizomata et radices

d. Filicis maris rhizomata

e. Urticae folia

295. What document must be prepared by a pharmacy's cashier for the cash collection?

a. Cash deposit slip

b. Cash book

c. Accompanying statement

d. Cashier's check

e. Payment order

296. Name the main indicator that differentiates water for injection from purified water:

- a. The way in which it was obtained
- b. Absence of mechanical inclusions
- c. Apyrogenicity**
- d. Absence of heavy metals
- e. pH value

297. Different types of granulation are used in the tablet production. What is the most productive method of structural granulation?

- a. Granulation using briquetting
- b. Granulation in the dragee pan
- c. Wet granulation in vertical granulators
- d. Granulation in spray dryers
- e. Granulation in the fluidized bed

298. 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

299. 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

300. How should the rectal ointments be applied?

- a. Apply to the skin
- b. Apply to the affected area of the anus**
- c. Applied to the external genitalia
- d. Apply to the conjunctival mucosa
- e. Apply to the nasal mucosa

301. Eradication therapy must be prescribed for a patient with peptic ulcer disease of the duodenum. What antisecretory agent must be included into the eradication therapy scheme?

- a. Ranitidine
- b. Omeprazole**
- c. Almagel
- d. Famotidine
- e. Phosphalugel (Aluminum phosphate)

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

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

303. A pharmacy underwent a drug quality inspection on 25.02.2018. The inspector discovered that the pharmacy had a batch of Nimesil (Nimesulide) drug, dosage form 2 g x 30 sachets, with its registration certificate expired on 24.02.2018. Is the pharmacy allowed to sell this drug?

- a. Yes, with permit from the State Inspectorate
- b. Yes, with permit from the Pharmacopoeia Center
- c. Yes, it can sell all the batch that is already in its possession
- d. No**
- e. Yes, if approved by the head manager of the pharmacy

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

- a. Technological
- b. Social and psychological
- c. Social and political
- d. Administrative
- e. Economic**

305. Choose the solvent necessary to prepare concentrated solution of sodium bicarbonate in a pharmacy:

- a. Purified water**
- b. Ethanol
- c. Vaseline
- d. Chloroform
- e. Peach-kernel oil

306. What drug should be used first in case of anaphylactic shock?

- a. Prednisolone**
- b. Dibazol (Bendazol)
- c. Euphyllin (Aminophylline)
- d. Fexofenadine
- e. Loratadine

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

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

308. What factor enables the extraction of maximum amount of alkaloids from the herbal raw material?

- a. Slight heating
- b. Preliminary processing of raw materials for their saturation with 96% alcohol
- c. Certain value of the solution pH**
- d. Intense heating
- e. Herbal raw material should be fresh

309. What antibiotic has beta-lactam cycle in its structure?

- a. Streptomycin sulfate
- b. Chloramphenicol
- c. Doxycycline hyclate
- d. Benzylpenicillin potassium salt
- e. Lincomycin hydrochloride

310. The management of a pharmaceutical company performs an internal audit to check the compliance with proper work practices. What management function is used by the company's management in this case?

- a. Control
- b. Motivation
- c. Regulation
- d. Organization

e. Planning

311. A set of values, traditions, behavioral norms, and views inherent to an organisation characterizes its following feature:

- a. Capitalization level
- b. Culture**
- c. Profitability
- d. Success
- e. Self-development capability

312. 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. 1.0 and 9.0**
- d. 0.1 and 9.9
- e. 0.05 and 9.95

313. 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. Saturation phase
- b. Decline phase
- c. Testing phase
- d. Maturity phase
- e. Market entry**

314. 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

315. A folic acid molecule has a heterocyclic system, consisting of two condensed heterocycles - pyrimidine and pyrazine. Name this system:

- a. Corrin
- b. Purine
- c. Phenothiazine
- d. Isoalloxazine
- e. Pteridine**

316. Reye syndrome (encephalopathy, fatty degeneration of liver) develops as a side effect in children suffering from fever of viral origin when they take the following medicine:

- a. Acetylsalicylic acid**
- b. Metamizole sodium
- c. Paracetamol
- d. Celecoxib
- e. Ibuprofen

317. A pharmacy prepares sodium chloride solutions for injections or infusions. What are the additional requirements to the quality of sodium chloride for infusion solutions?

- a. Anhydrous, analytical grade pure
- b. Type <<for injections>>
- c. Analytical grade pure
- d. Chemically pure, depyrogenated**
- e. No manganese salt admixtures

318. Adhesive bandages have an effect on the skin, subcutaneous tissue, and in some cases on the

entire body. What bandage is manufactured with the saponification reaction occurring in the process?

- a. Simple lead bandage
- b. Callus treatment bandage
- c. Adhesive bandage
- d. Bactericidal adhesive bandage
- e. Pepper plaster bandage

319. A prescription does not specify the shape of rectal suppositories. What shape would be optimal in such case and therefore should be used by the pharmacist?

- a. Sphere
- b. Pessary
- c. Ovoid
- d. Torpedo
- e. Cylinder

320. A pharmaceutical company has launched a number of cold relief medicines in the form of syrups and lozenges for kids. What type of market segmentation was used by this company?

- a. Behavioral
- b. Demographic**
- c. -
- d. Geographical
- e. Psychographic

321. To determine the quantity of wild-growing medicinal plants, it is necessary to know their area of vegetation and yield per unit area. Yield of *Thymus serpyllum* grass can be determined by the following method:

- a. Projective cover method**
- b. Permanent quadrat method
- c. Model sample method
- d. Geodesically
- e. Visually

322. Motherwort grass is a component of hypotensive and sedative drugs. This herbal raw material should be harvested taking into account its renewal rate. Therefore it can be harvested:

- a. Every year
- b. Once every 3 years
- c. Once every 10 years
- d. Once every 5 years**
- e. Once every 2 years

323. The documents of a pharmaceutical company are being received and sent in a centralized manner; the documents are stored, drawn-up, registered, and assembled into cases both in the Office Desk of the company and the company's divisions. Specify this type of records management system:

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

324. A 65-year-old patient diagnosed with ischemic heart disease was prescribed acetylsalicylic acid as an antiplatelet agent. What daily dose of this drug will have an antiplatelet effect?

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

325. The method of stirring-up (dispersion) is used to make suspensions with a certain substance. Name this substance:

- a. Ethazole
- b. Sulfur
- c. Camphor

d. Basic bismuth nitrate

- e. Streptocide (Sulfanilamide)

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

- a. A company, the members of which bear additional solidary liability for the company's obligations with all their property, while the company's investors bear liability only in the amount of their investments
- b. A company, the members of which bear the liability for the company's debts within the amount of their contributions, and if these amounts are insufficient, all the members are equally liable to cover the debt with their personal property
- c. A company, the members of which bear additional solidary liability for the company's obligations with all their property

d. A company, the members of which bear the liability for the company's debts within the amount of their contributions

- e. A company, the members of which bear full liability

327. 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. Nitrofurantoin
- b. Sulfamethoxazole

c. Tyrosine

- d. Resorcin
- e. Retinol acetate

328. 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. Competitive Intensity
- b. Market share and market growth rate
- c. Market segments
- d. Business opportunities
- e. Attractiveness of the industry

329. One of the substances listed below changes its appearance when stored in a brightly lit place and not tightly sealed against air (assumes pink coloring). Name this substance:

- a. Barium sulfate

b. Resorcin

- c. Sodium chloride
- d. Boric acid
- e. Sodium benzoate

330. 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

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

a. Intestinally absorbed

- b. Water-soluble
- c. Gastrically absorbed
- d. Fat-soluble
- e. -

332. A patient developed dry cough while undergoing pharmacotherapy for arterial hypertension. What group of drugs can be characterized by this side effect?

- a. Tranquilizers
- b. Antipsychotics
- c. Antacids
- d. Calcium antagonists
- e. ACE inhibitors

333. Organizationally, a pharmacy is divided into separate departments: Prescription and Extemporaneous Medicines, Stock Department, and Over-the-Counter Medicines. What organizational management structure can be characterized by such a division?

- a. Line and staff
- b. Divisional
- c. Linear
- d. Matrix
- e. Functional

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

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

335. According to Decree №360 issued by the Ministry of Health of Ukraine, there is a list of medicines that cannot be prescribed to outpatients. Select one such drug from the list below:

- a. Tramadol
- b. Atropine sulfate
- c. Zopiklon
- d. Tetracaine
- e. Nitrous oxide

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

- a. Value added tax
- b. Individual income tax
- c. Real estate tax
- d. Rent
- e. Corporate income tax

337. 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. Anthracene derivatives
- c. Alkaloids
- d. Saponins
- e. Tannins

338. The tableting department of a pharmaceutical company begins to produce "fizzy" vitamin tablets. Name the groups of gas-producing leavening agents:

- a. Citric acid and aerosil (fumed silica)
- b. Tartaric acid and sodium bicarbonate
- c. Ascorbic acid and aerosil (fumed silica)
- d. Tartaric acid and magnesium stearate
- e. Citric acid and magnesium stearate

339. The mother of a child came to a pharmacy to buy an anti-inflammatory medicine that can relieve the muscle pain in her 10-year-old son. What medicine would you recommend her?

- a. Diclofenac
- b. Acetylsalicylic acid
- c. Naproxen
- d. Nimesulide
- e. Ibuprofen

340. 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. Cash cheque
- b. Fiscal receipt for the goods sold (or services rendered)
- c. Accounting form
- d. Payment order
- e. Cash withdrawal receipt

341. The marketing team of a pharmaceutical company has performed a comparative analysis of internal environment and external conditions. They have analyzed strengths and weaknesses, opportunities and threats. The marketing team has performed:

- a. PEST analysis
- b. VEN analysis
- c. -
- d. SWOT analysis
- e. ABC analysis

342. A pharmacy has received a formulation for the solution with a substance that moderately expands in the cold water. Name this substance:

- a. Sodium chloride
- b. Gelatin
- c. Glucose
- d. Protargol (Silver proteinate)
- e. Calcium chloride

343. What substance can be determined using the Beilstein test during rapid analysis of drugs?

- a. Nitrogen
- b. Fluoride
- c. Hydrogen
- d. Oxygen
- e. Chlorine

344. A dispensing chemist with calculated length of service of 7 years has fallen ill. What percent of the sum stated in her sick list would she receive?

- a. 50%
- b. 60%
- c. 70%
- d. 100%
- e. 80%

345. Cynara scolymus herbal raw material is a source of drugs with antisclerotic, choleretic, and hepatoprotective effect. What parts of the plant are harvested as a herbal raw material?

- a. Roots
- b. Grass
- c. Seeds
- d. Fruits
- e. Leaves and flower heads

346. Arctostaphylos leaves have uroseptic effect. The following is an allowable admixture to this herbal raw material:

- a. Folia Digitalis lanata
- b. Folia Vitis idaeae
- c. Folia Urticae



- d. Folia Cotini coggygriae
- e. Herba Bursae pastoris

347. In the process of isoniazid identification a pharmacy analyst thoroughly boiled the substance with 2,4-dinitrochlorobenzene. The substance turned yellow. After adding alkaline solution the substance turned first violet and then brownish-red. As the result of this reaction the following aldehyde derivative is produced:

- a. Glutamic
- b. Hexanic
- c. Glutaconic**
- d. Glyoxylic
- e. Gluconic

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

- a. Middlemen-oriented sales promotion
- b. Consumer-oriented sales promotion**
- c. Personal sale
- d. Salesmen-oriented sales promotion
- e. Public relations, sponsorship

349. Various types of glass are used in production of parenteral drugs. What type of glass is used for photosensitive substances?

- a. Borosilicate neutral glass "УСП -1"
- b. Neutral glass "HC-2A"
- c. Light-resistant neutral glass "CHC-1"**
- d. Alkaline glass "АБ-1"
- e. Neutral glass "HC-2"

350. 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. Morphine
- b. Codeine
- c. Platyphyllin
- d. Scopolamine**
- e. Papaverine

351. To improve structural and mechanical properties of capsule shells, to ensure their proper elasticity and reduce their brittleness, the following substances are introduced into the gelatin mass:

- a. Preservatives
- b. Stabilizers
- c. Pigments
- d. Thickeners
- e. Plasticizers**

352. A pharmacy prepares a drug that contains a high-molecular compound with unlimited swelling ability. Name this material:

- a. Methylcellulose
- b. Starch
- c. Pepsin**
- d. Protargol
- e. Gelatine

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

- a. Colloidal solution
- b. True solution
- c. High-molecular compound solution

d. Opalescent mixture

e. Emulsion

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

a. Propranolol

b. Fenoterol

c. Nitroglycerin

d. Amlodipine

e. Verapamil

355. A dispensing chemist has received his salary with a bonus for working at night. This bonus is paid for the following working hours:

a. From 24.00 to 8.00

b. From 21.00 to 9.00

c. From 23.00 to 7.00

d. From 22.00 to 6.00

e. From 20.00 to 9.00

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

a. At least once per shift

b. At least twice a week

c. At least once a week

d. At least once a month

e. At least twice a month

357. What method is used to sterilize the eye drops containing benzylpenicillin sodium salt?

a. Ultraviolet radiation

b. Steam under pressure

c. Hot air

d. Not subject to sterilization

e. Flowing steam

358. A 74-year-old man came to the pharmacy. He had been prescribed ampicillin for antibiotic treatment of dysenteric gastroenterocolitis. What group of drugs should be recommended for dysbiosis prevention in this case?

a. Sorbents

b. Enzymatic agents

c. Immunosuppressants

d. Probiotics

e. Antacids

359. A pharmacy manager has drawn up a work schedule for the next month. What type of management activity is aimed at making highly specific, detailed, short-term plans?

a. Operational planning

b. Financial planning

c. Strategic planning

d. Business planning

e. -

360. Specify a potent herbal raw material, infusion from which is made in 1:400 ratio:

a. Foxglove leaves

b. Valerian roots and rhizomes

c. Sage leaves

d. Motherwort grass

e. Althaea roots

361. Passiflora incarnata grass contains a complex of indole alkaloids. What pharmacological group do

Passiflora preparations belong to?

- a. Laxatives
- b. Sedatives**
- c. Diuretics
- d. Antibacterial agents
- e. Wound healing agents

362. Product sales manager of a pharmaceutical company was tasked with sales program inspection and given 10 days to complete this task. The manager completed this task within 5 days and expects to be rewarded with a bonus. What theory of achievement motivation is based on expectation of a certain event?

- a. Herzberg's two-factor theory
- b. Maslow's hierarchy of needs
- c. McGregor's Theory X and Theory Y
- d. Vroom's expectancy theory**
- e. McClelland's theory of needs

363. What pharmacotherapeutic characteristic of a medicine allows its classification as over-the-counter drug?

- a. Medicine can cause no direct or indirect harm to the patient's health**
- b. Medicine contains substances that require additional research into their activity and side-effects
- c. Medicine is available only by prescription
- d. Medicine is available only for in-patient treatment
- e. Medicine has entered the pharmaceutical market only recently and actual experience with its practical application is limited

364. If vehicle is not specified, an eye ointment should be prepared with the following sterile vehicle:

- a. Lanolin: vaseline - 1:1
- b. 30 parts of lanolin - 70 parts of vaseline
- c. 40 parts of anhydrous lanolin - 60 parts of vaseline For Eye Ointments
- d. Vaseline For Eye Ointments
- e. 10 parts of anhydrous lanolin - 90 parts of vaseline For Eye Ointments**

365. A pharmaceutical wholesaler has suffered commercial losses because of unpaid debts of a pharmacy network. What type of commercial losses is it?

- a. Labor
- b. Financial**
- c. Special
- d. -
- e. Material

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

- a. Fixed assets
- b. Accounts receivable
- c. Authorized capital**
- d. Monetary funds
- e. Goods

367. Specify the indicator that measures the total contribution of various solutes to the osmotic pressure of the solution:

- a. Apyrogenicity
- b. Isohydricity
- c. Isoviscosity
- d. Osmolality
- e. Isotonicity**

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

369. 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. Ammonium chloride solution
- c. Iron(III) chloride solution**
- d. Sodium bicarbonate solution
- e. Potassium hydroxide solution

370. 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. Organization
- b. Delegation**
- c. Planning
- d. Control
- e. Motivation

371. A doctor prescribed amoxicillin to a patient to treat bronchitis. What mucolytic is synergistic with this antibiotic?

- a. Euphylline (Theophylline)
- b. Ambroxol**
- c. Glaucine
- d. Codeine
- e. Dextromethorphan

372. Cash can be withdrawn from the organisation's funds on the basis of a withdrawal receipt. What transaction requires a withdrawal receipt?

- a. Receipt of the funds for salary payment
- b. Receipt of the proceeds from sales
- c. Return of unused accountable funds
- d. Coverage of the shortages revealed during the stock-taking
- e. Payment for the goods purchased for the household needs**

373. Propellants are used in aerosols production. Specify the function of propellants:

- a. Action prolongation
- b. Create pressure in the package**
- c. Dispersion
- d. Emulsification
- e. Stabilization

374. Most drugs contain heterocyclic fragments in their structure. Which of the following drugs is a pyrrole derivative?

- a. Phencarol (Quifenadine)
- b. Furosemide
- c. Piracetam**
- d. Bendazol
- e. Tolbutamide

375. 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. Ability to sublime
- b. Ability to change color depending on the pH of the medium**

- c. Amorphous state
- d. Solubility in fats
- e. Alcohol precipitation

376. What amount of the standard pharmacopoeial fluid of aluminum acetate must be taken to prepare 100 mL of 10% Burov's solution?

- a. 3 mL
- b. 6.25 mL
- c. 7.5 mL
- d. 12.5 mL
- e. 10 mL

377. A pharmacy pays considerable attention to the technique of medicine placement in the glass cabinets and on the shelves to create favorable conditions for sales and attracting the attention of consumers. Name this set of measures:

- a. Advertising
- b. Lobbying
- c. Public relations
- d. Personal sale
- e. Merchandising

378. A pharmacist prepares 100 ml of glucose solution. Specify the amount of Weibel's stabilizer necessary in this case:

- a. 5 ml
- b. 10 ml
- c. 15 ml
- d. 2 ml
- e. 20 ml

379. A pharmaceutical company has divided its customers into groups based on their gender, age, and size of their families. What approach to market segmentation is the basis of this customer division?

- a. Psychographic
- b. Socioeconomic
- c. Geographic
- d. Behavioral
- e. Demographic

380. A pharmaceutical company produces aromatic waters. Peppermint water should be prepared in the following proportion:

- a. 1:2000
- b. 1:1000
- c. 1:4000
- d. 1:1
- e. 1:10

381. 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

382. Name the list of pharmacy's property that indicates the actual balance and value of pharmacy's stocks as determined in the process of stock-taking:

- a. Register of requisitions
- b. Inventory

- c. Commodity report
- d. Accounts ledger
- e. Cash flow register

383. A certain substance is yellow, but does not leave a colored mark on the filter paper, mortar, and pestle. Powders with this substance are prepared according to the general rules. Name this substance:

- a. Furacilin (Nitrofur)
- b. Sulfur
- c. Riboflavin
- d. Methylene blue
- e. Brilliant green

384. A pharmacist has made a topical solution with lipophilic vehicle. Specify the substance that produces such a type of solution:

- a. Menthol
- b. Starch
- c. Sulfur
- d. Novocaine hydrochloride
- e. Dermatol (bismuth subgallate)

385. Menthol medicinal substance can be chemically classified as a:

- a. Bicyclic terpene
- b. Glycoside
- c. Monocyclic terpene
- d. Polypeptide
- e. Acyclic terpene

386. What medicines cannot be advertised in pharmacies and their structural units?

- a. Cosmetics
- b. Disinfectants
- c. Prescription medicines
- d. Dietary supplements
- e. Over-the-counter medicines

387. All the values, traditions, behavioral norms, and views that are characteristic of the employees of a pharmaceutical company together form its:

- a. Diversification
- b. -
- c. Culture
- d. Etiquette
- e. Integration

388. Indometacine is a nonsteroidal antiinflammatory drug. A condensed heterocyclic system is contained within the structure of this drug. What cycles compose the system?

- a. Two 4-oxycoumarin residues
- b. Benzene and thiazole
- c. Pyrimidine and imidazole
- d. Pyrrole and benzene
- e. Benzene and pyridine

389. 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. Prazosin
- b. Captopril
- c. Corglycon (convallatoxin)
- d. Nitroglycerine
- e. Enalapril

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

- a. Increased tone of the cough center
- b. Gastroesophageal reflux
- c. Inhibition of histamine synthesis
- d. Exacerbation of chronic bronchitis
- e. Accumulation of residual bradykinin in the blood**

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

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

392. Name the official document on audit results, which is drawn under the standard procedure and contains conclusions about reporting credibility and integrity of financial statements of an organization:

- a. Auditor's conclusion**
- b. Statement of changes in equity
- c. Cash flow statement
- d. Balance sheet
- e. Income statement

393. A pharmacy has bought a refrigerator. What document should be filled in for such purchase?

- a. An inventory list needs to be drawn up
- b. No accounting documentation needs to be kept
- c. It should be assigned an inventory number and registered in the inventory cards**
- d. A deposit order should be filled in
- e. Information should be entered into the goods report

394. Nicotinamide is a pyridine derivative, which can be identified by its positive reaction with:

- a. Grade reagent
- b. Copper-tartrate solution
- c. Thioacetamide reagent
- d. Cyanogen bromide reagent**
- e. Thioglycolic acid solution

395. A medical product reaches its final consumer according to the following scheme: manufacturer → wholesale house → pharmacy → final consumer. Determine the level of the distribution channel:

- a. Three-level channel
- b. Two-level channel**
- c. Four-level channel
- d. Zero-level channel
- e. One-level channel

396. A teenager with hyporexia has been recommended to drink medicinal herbal tea of the following composition: Herba Absinthii, Herba Millefolii. Specify the characteristic microscopic features of *Artemisia absinthium*, which indicate its presence in the herb mixture:

- a. Simple and capitate hairs
- b. Branched, simple and ciliated hairs
- c. T-shaped hairs along the leaf edge**
- d. Branched and capitate hairs
- e. Retor-shaped hairs

397. A dispensing chemist specifies the name of a herbal raw material, its mass, the area where it has

been harvested, and the date of harvest. Name this procedure:

- a. Harvesting of herbal raw material
- b. Standardization of herbal raw material
- c. Packing of herbal raw material
- d. Marking of herbal raw material**
- e. Sorting of herbal raw material

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

- a. Glucose**
- b. Novocaine
- c. Potassium chloride
- d. Magnesium sulfate
- e. Sodium chloride

399. A pharmacist has made an injection solution that contains a salt produced by reaction of a strong base with a weak acid. Specify the necessary stabilizer:

- a. Hydrochloric acid
- b. Ascorbic acid
- c. Cysteine
- d. Sodium hydrochloride**
- e. Sodium sulfate

400. Identification of potassium iodide requires performing an oxidation reaction in acid medium, which produces free iodine that colors chloroform layer. What reagent is used for such a reaction?

- a. Ammonium oxalate
- b. Barium chloride
- c. Sodium carbonate
- d. Silver nitrate
- e. Sodium nitrite**

401. How many mL of nitrofurazone (furacilin) is it necessary to measure out for preparation of 250 mL of nitrofurazone solution (1:5000)?

- a. 0.25
- b. 0.025
- c. 0.05**
- d. 0.5
- e. 5.0

402. What device is used to disperse medicinal substances and homogenize ointments?

- a. Double-slide tablet press machine
- b. Excelsior
- c. Dismembrator
- d. Disintegrator
- e. Three-roll ointment mill**

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

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

404. 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. Offer
- b. Contract
- c. Complaint
- d. Request**



e. Statement

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

a. Ototoxicity

b. Increased blood pressure

c. Vomiting

d. Decreased blood pressure

e. Red coloring of urine

406. Standard herbal material of lily-of-the-valley is obtained by drying it at a temperature of 50-60°C to prevent the following possible biochemical process:

a. Volatilization of essential oils

b. Enzymatic hydrolysis of cardiac glycosides

c. Oxidation of resins

d. Oxidation of terpenoids

e. Oxidation of phenolic compounds

407. A pharmacist at the pharmacy has received a promotion. What type of job rotation is it?

a. Mixed

b. Horizontal

c. Vertical

d. -

e. Combined

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

a. Gastrointestinal bleeding

b. Salivation

c. Myocarditis

d. Pyelonephritis

e. Pneumonia

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

a. Secoiridoids

b. Common iridoids

c. Cyclopentane iridoids

d. Valepotriates

e. Complex iridoid alkaloids

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

a. Litholytic

b. Laxative

c. Diuretic

d. Choloretic

e. Sedative

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

a. Berberis roots

b. Panax ginseng roots

c. Taraxacum roots

d. Glycyrrhiza roots

e. Aralia mandshurica roots

412. A herbal raw material that contains alkaloids is being identified using a freshly prepared tannin solution. What precipitate forms as a result of this reaction?

- a. Creamy
- b. Red-brown
- c. Green
- d. Yellow
- e. White and amorphous**

413. Functional group analysis is widely used to identify organic medicines. What medicine contains phenolic hydroxyl in its structure?

- a. Sulfanilamide
- b. Promedol (Trimeperidine)
- c. Phenazepam
- d. Papaverine hydrochloride
- e. Epinephrine tartrate**

414. 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

415. According to the State Pharmacopoeia of Ukraine, chemical identification of Atropa belladonna grass must be carried out using thin-layer chromatography. What substance is identified on a chromatographic plate after treatment with a reagent?

- a. Gallic acid
- b. Arbutin
- c. Vinblastine
- d. Rutin
- e. Hyoscyamine**

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

- a. No less than 50 m<sup>2</sup>
- b. No less than 30 m<sup>2</sup>
- c. No less than 18 m<sup>2</sup>**
- d. No less than 40 m<sup>2</sup>
- e. No less than 250 m<sup>2</sup>

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

- a. Spansules
- b. Microcapsules
- c. Tubatines**
- d. Rectal capsules
- e. Medules

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

- a. Extract from the State Register of Medicines
- b. Written Control Passport
- c. Drug Quality Standard
- d. Technical regulations for the drug
- e. Conclusion on the quality of the drug imported into Ukraine**

419. A pharmacy prepares drugs by individual prescriptions. How often should the floors be mopped down in the prescription department?

- a. Once every 5 days
- b. Once in a week

- c. Once every 3 days
- d. Once in a shift**
- e. Once every 10 days

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

- a.  $\text{FeCl}_3$
- b.  $\text{K}_2\text{CrO}_4$
- c.  $[\text{NH}_4]_2\text{C}_2\text{O}_4$
- d.  $\text{KMnO}_4$
- e.  $\text{K}_2[\text{HgI}_4]$

421. Doctor's prescription has several functions. What function of the prescription allows its participation in the process of payment in cases when medicines should be issued free of charge or at a reduced price?

- a. Technological
- b. Social
- c. Medical
- d. Economic
- e. Legal

422. A patient was prescribed an oral antibiotic for treatment and an antacid to remove heartburn symptoms. If the drugs are taken simultaneously their interaction can result in the following:

- a. Antibiotic malabsorption**
- b. Acceleration of metabolism and excretion
- c. Mutual potentiation
- d. Inhibition of hepatic microsomal enzymes
- e. Relative overdosage

423. 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

424. What corticosteroid medicinal substance has two fluorine atoms in its chemical structure?

- a. Prednisolone
- b. Fluocinolone acetonide**
- c. Triamcinolone acetonide
- d. Dexamethasone
- e. Hydrocortisone acetate

425. A pharmacist has prepared a medicine, using the following formulation: *Magnesii oxydi Natrii hydrocarbonatis ana 0.2 M. f. pulv. D. t. d. №12 S. Take one powder thrice a day. endtabular* What is the optimal preparation technique in this case?

- a. Comminute a part of magnesium oxide, add sodium bicarbonate, add the remaining magnesium oxide, mix the ingredients
- b. Comminute magnesium oxide, add sodium bicarbonate, mix the ingredients
- c. Comminute sodium bicarbonate with alcohol, add magnesium oxide, mix the ingredients
- d. Comminute sodium bicarbonate, add magnesium oxide, mix the ingredients**
- e. Comminute magnesium oxide with alcohol, add sodium bicarbonate, mix the ingredients

426. The head managers of the pharmacy's over-the-counter department and ready-to-use drugs department exchange information on the demand for medicines. What type of communication is it?

- a. Interlevel
- b. Vertical descending

- c. Horizontal
- d. Vertical ascending
- e. External

427. When an extractant is filtered through a herbal raw material to obtain an extract of the substances soluble in this extractant, this process is called:

- a. Turbo extraction
- b. Percolation**
- c. Steeping
- d. Remaceration
- e. Maceration

428. 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

429. Employees of a wholesale pharmaceutical company have undergone an assessment for their compliance with the requirements of their respective positions. Specify the type of human resources assessment:

- a. Concluding**
- b. Concurrent
- c. -
- d. Financial
- e. Preliminary

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

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

431. An analytical pharmacist is testing a thiamine hydrobromide substance. What solution would the pharmacist use to determine sulfate impurities?

- a. Sodium benzoate solution
- b. Barium chloride solution**
- c. Ammonium oxalate solution
- d. Sodium nitrite solution
- e. Calcium chloride solution

432. Drugs derived from Rauvolfia serpentina roots are used in hypertension treatment. Authenticity of Rauvolfia serpentina herbal raw material can be confirmed by its content of:

- a. Atropine
- b. Reserpine**
- c. Adonitoxin
- d. Hyoscyamine
- e. Vinblastine

433. A 24-year-old patient after a thorough examination was diagnosed with type 1 diabetes mellitus for the first time. What antihyperglycemic agent should be prescribed in this case?

- a. Etacrynic acid
- b. Urea
- c. Insulin**
- d. Metformin

e. Glibenclamide

434. 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**

435. 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 3 days
- b. In 10 days
- c. In a month
- d. In 5 days
- e. In a week

436. 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

437. The phytochemical workshop of a factory produces liquid extracts. What extractants are used in this manufacturing process?

- a. Dichloroethane
- b. Chloroform
- c. Water
- d. Aqueous-alcoholic solutions**
- e. Ammonia solution

438. Publicly-owned Isotope factory is the only manufacturer of radiopharmaceuticals in Ukraine. What type of distribution is characteristic of radioactive drugs?

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

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

- a. Sales promotion, sampling**
- b. Advertising
- c. Personal selling
- d. Lobbying
- e. Public relations

440. Manufacturer's marketing department detected negative demand for a certain goods. What would be the marketing task? What type of marketing should be applied?

- a. Demand making, conversion marketing**
- b. Demand stimulation, promotional marketing
- c. Demand increase, remarketing
- d. Demand decrease, demarketing
- e. Demand leveling, synchromarketing

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

- a. Ready-made dosage forms
- b. Medical cosmetics
- c. Stock of goods
- d. Over-the-counter sales

e. Prescription and production

442. A patient with heart failure has developed an electrolyte imbalance against the background of diuretic treatment with furosemide. What imbalance has the patient developed?

- a. Hyperkalemia
- b. Hyponatremia
- c. Hypermagnesemia
- d. Hypocalcemia

e. Hypokalemia

443. 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. Flavonoids
- b. Xanthones
- c. Coumarins
- d. Iridoids

e. Lignans

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

- a. Technology of obtaining liquid extracts
- b. Rinsing of exhausted raw material with 3-5 times the amount of ethanol
- c. Distillation with inert gases
- d. Deep vacuum distillation

e. Separation of the mixture consisting of mutually-associating liquids with different boiling temperature into separate fractions

445. 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. Nitric acid solution
- b. Hydrochloric acid solution

c. Tartaric acid solution

- d. Acetic acid solution
- e. Benzoic acid solution

446. A 62-year-old woman has been diagnosed with acute pyelonephritis. She was prescribed gentamicin. Additionally, she takes furosemide. What are the possible complications of such treatment?

- a. Increased hematotoxicity of gentamicin
- b. Increased hepatotoxic action of aminoglycosides

c. Increased ototoxicity of aminoglycosides

- d. High risk of seizures
- e. High risk of allergic reactions

447. 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. Elastic demand

- b. Unitary demand
- c. Perfectly inelastic demand
- d. Inelastic demand

e. Universal demand

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

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

449. 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 beta<sub>2</sub>-adrenomimetic. What medicine was prescribed by the doctor in this case?

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

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

- a. Precipitation
- b. Precipitation and gassing
- c. Ammonia production
- d. Color change from yellow to black
- e. Solution decoloration

451. Employees of a pharmaceutical company have formed a group consisting of cycle sport fans. Such group is called:

- a. Informal
- b. Formal
- c. Committee
- d. Manufacturing
- e. Commercial

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

- a. Folia Menthae piperitae
- b. Folia Eucalypti
- c. Folia Salviae
- d. Folia Absinthii
- e. Folia Betulae

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

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

454. What structure is authorized to issue permits for individual or collective provision of audit services in Ukraine?

- a. The State Service of Ukraine for Medicines
- b. The Audit Chamber of Ukraine
- c. The State Service of Ukraine for Drug Control
- d. The Control and Revision Office
- e. The State Regulatory Service of Ukraine

455. An accountable person has received a sum of money from the pharmacy cash desk to buy a

calculator. What document records the cash flow in such a transaction?

- a. Cash expense order
- b. Invoice
- c. Remains unregistered documentarily
- d. Cash income order
- e. Receipt

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

457. Snake venom-based drugs are widely applied in treatment of locomotor apparatus diseases. Main components of these venoms are:

- a. Toxic proteins
- b. Cardiac glycosides
- c. Alkaloids
- d. Phenol-alcohols
- e. Glucosinolates

458. The chemical name of 2,2-(diphenylmethoxy)-N,N-dimethyl-ethanamine hydrochloride corresponds with the following medicinal substance:

- a. Diphenhydramine hydrochloride
- b. Papaverine hydrochloride
- c. Lidocaine hydrochloride
- d. Ciprofloxacin hydrochloride
- e. Ethylmorphine hydrochloride

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

- a. Focus on individual results
- b. Strict control procedure
- c. Individualism
- d. Collectivism
- e. Strictly formalized management system

460. 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. Naphthalene cycle
- c. Steroid cycle
- d. Xanthine cycle
- e. Imidazole cycle

461. What substance forms a film coating of tablets and can be dissolved only in intestinal juice?

- a. Benzylaminocellulose
- b. Sodium carboxymethyl cellulose
- c. Acetylphthalylcellulose
- d. Diethylaminomethylcellulose
- e. Paraaminobenzoate of sugars

462. A pharmacist needs to weigh out a medicinal substance from the general list - glucose. What minimum amount of glucose can be weighed out using one-gram hand scales?

- a. 0.02 g
- b. 0.05 g
- c. 0.04 g



- d. 0.01 g
- e. 0.03 g

463. Pharmacy as a healthcare facility fulfills three main functions. Its manufacturing function includes:

- a. Health education of the population
- b. Pharmaceutical care
- c. Providing access to pharmaceutical information
- d. Preparation of individual formulations**
- e. Storage of medical products

464. *Althaea officinalis* roots require special conditions for infusion. What special technique must be used for infusion of this herbal raw material?

- a. Immediate filtration
- b. The presence of ascorbic acid
- c. The presence of sodium bicarbonate
- d. Cold infusion**
- e. The presence of hydrochloric acid

465. Highly convincing approach to informing the population about the company and its products, commercial promotion of high use value of the goods and proper conduct of business by the company, actions intended to prompt purchase of goods by both active and potential customers are all characteristic of:

- a. Supply
- b. Advertisment**
- c. Marketing
- d. Communications
- e. Trademark

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

- a. Raoult's law
- b. Dalton's law
- c. Clapeyron-Mendeleev equation
- d. Boyle-Mariotte law
- e. -

467. 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. Insurance
- b. Indexation
- c. Diversification**
- d. Liquidation
- e. Bankruptcy

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

- a. Microcrystalline
- b. Coloring
- c. Macrocrystalline**
- d. Volatile
- e. Colored

469. 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. An intense blue coloring appears
- c. A black precipitate forms, which dissolves if a diluted sodium hydroxide solution is added
- d. A white precipitate forms, which is insoluble in a diluted hydrochloric acid
- e. A pale yellow ether-soluble precipitate forms

470. At a pharmacy, during the visual inspection, an authorized person has doubts about the quality of medicines. What measures should be taken in this case?

- a. Withdraw the medicines and send them to the quality assurance department of the manufacturing company
- b. Withdraw the medicines and send them back to the supplier
- c. Withdraw the medicines and send them back to the manufacturing factory
- d. Withdraw the medicines and send them for laboratory testing**
- e. Withdraw the medicines and send them for disposal

471. Prior to making a sodium chloride isotonic solution a pharmacist baked the powder in a dry heat box. What substances are removed by this operation?

- a. Chlorides
- b. Redox substances
- c. Sulfates
- d. Pyrogenic substances**
- e. Moisture

472. 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. Vinca minor
- c. Glaucium flavum
- d. Passiflora incarnata
- e. Chelidonium majus

473. 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 risk of dysbiosis
- d. Decreases ofloxacin absorption**
- e. Increases ofloxacin absorption

474. An analytical chemist performs the qualitative assessment of mercury (II) chloride. What method is recommended by the State Pharmacopoeia of Ukraine for quantitative assessment in this case?

- a. Bromometry
- b. Complexometric titration**
- c. Nitritometric titration
- d. Acidimetry
- e. Alkalimetry

475. Which of the plants listed below contain inulin?

- a. Rhamnus cathartica, Sorbus aucuparia
- b. Inula helenium, Helianthus tuberosus**
- c. Juniperus communis, Thymus serpyllum
- d. Salvia officinalis, Artemisia absinthium
- e. Ledum palustre, Acorus calamus

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

- a. Bolus alba
- b. Talcum

- c. Sugar
- d. Basic bismuth nitrate
- e. Sodium bicarbonate

477. 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

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

- a. Crystal violet
- b. Methyl orange
- c. Naphtholbenzein
- d. Methyl red
- e. Ferroin**

479. The main method of quantitative determination of corticosteroids is:

- a. Potentiometry
- b. Argentometry
- c. Acidimetry
- d. Cerimetry
- e. Spectrophotometry**

480. 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

481. Polemonium caeruleum rhizomes with roots are a source material for making expectorants. What group of substances causes this effect?

- a. Vitamins
- b. Tannins
- c. Saponins**
- d. Anthraquinones
- e. Flavonoids

482. The thyme grass is used for the production of herbal medical products for the treatment of respiratory tract infections. Under the State Pharmacopoeia of Ukraine the herbal raw material is subject to chromatographic identification by means of thin layer chromatography. What substances are detected on the chromatographic plate after its treatment with due reagent?

- a. Atropine and hyoscyamine
- b. Apigenin and luteolin
- c. Thymol and carvacrol**
- d. Quercetin and rutin
- e. Arbutin and methyl arbutin

483. How should the tablets of pancreatin enzyme preparation be taken?

- a. 1 hour after a meal
- b. During eating**
- c. Regardless of food intake
- d. 1 hour before a meal
- e. 2 hours before a meal

484. A powder with a hard to disintegrate substance has been made in a pharmacy. Specify this substance:

- a. Talcum
- b. Camphor
- c. Sodium chlorides
- d. Sugar
- e. Osarsolum (Acetarsol)

485. What preparation has an antacid effect?

- a. Omeprazole
- b. Pirenzepine
- c. Aluminum phosphate
- d. Ranitidine
- e. Famotidine

486. What pharmaceutical factor can affect therapeutic activity of active substances?

- a. Adjuvants
- b. WHO directives
- c. Compliance with GMP regulations
- d. Material expenses of the manufacture
- e. Drug dosing equipment

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

- a. Indomethacin
- b. Nimesulide
- c. Acetylsalicylic acid
- d. Metamizole sodium
- e. Ibuprofen

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

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

489. What adjuvants can increase the viscosity and melting temperature of an ointment base?

- a. Propylene glycol, gelatin
- b. Paraffin, spermaceti
- c. Benzalkonium chloride
- d. Ethanol, purified water
- e. Sodium lauryl sulfate

490. A patient measures out a necessary dose of a mixture, using a tablespoon. How many milliliters of liquid does one tablespoon contain?

- a. 5
- b. 25
- c. 15
- d. 20
- e. 10

491. 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

492. Within the last year the "East-Pharmacy" pharmaceutical wholesaler has lost 10% of its employees, who resigned and were hired by the competitor company "East-Optima". Individual transfer of the "East-Pharmacy" employees to the "East-Optima" company can be characterized as:

a. Staff turnover

b. Personnel certification

c. Staff motivation

d. Staff dynamics

e. Job rotation

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

a. Magnesium sulfate

b. Silybum dry extract

c. Ademethionine

d. Ursodeoxycholic acid

e. Cynara dry extract

494. The marketing department of a pharmaceutical company conducts a field research of the pharmaceutical market. What method of information collection belongs to the field research?

a. Customer survey

b. Analysis of the scientific publications

c. Analysis of the company's statistical reports

d. Analysis of the periodical publications

e. Analysis of the statistical reference books

495. To retain full control over its trade operations on the regional market, the "Fitoprom" pharmaceutical company conducts its marketing policy without any intermediate parties. Name the marketing practice that excludes the middleman:

a. Mixed

b. Indirect

c. Combined

d. Mediated

e. Direct

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

a. Breakeven

b. Margin

c. Income

d. Production cost

e. Markup

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

a. In the order of increasing volume of alcohol-containing solutions

b. In the order of decreasing alcohol concentration

c. In any order

d. First into the vial for dispensing

e. In the order of increasing alcohol concentration

498. 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. 15 000 UAH

b. 40 000 UAH

c. 30 000 UAH

d. 35 000 UAH

e. 5 000 UAH

499. What amount of the standard pharmacopoeial formaldehyde solution must be taken to prepare 100 mL of a 20% formalin solution?

- a. 5 mL
- b. 30 mL
- c. 54 mL
- d. 20 mL**
- e. 10 mL

500. Pharmacy assets can be divided into current and non-current. What should be classified as non-current assets when drawing up the balance sheet?

- a. Goods
- b. Buildings**
- c. Packaging
- d. Herbal raw materials
- e. Monetary funds

501. The medicinal plants of the Fabaceae family contain various groups of bioactive substances. What representative of this family contains flavonoids and is used as an industrial source of rutin?

- a. Glycyrrhiza glabra
- b. Ononis arvensis
- c. Bidens tripartita
- d. Thermopsis alterniflora
- e. Styphnolobium japonicum**

502. A medicine has caused a side effect in the patient due to the patient's hereditary defect of the enzymatic system. This phenomenon is called:

- a. Idiosyncrasy**
- b. Drug dependence
- c. Withdrawal syndrome
- d. Allergic response
- e. Dysbiosis

503. Microscopy of a root of a certain medicinal plant reveals the following features: parenchyma cells contain inulin, there are laticifers, cambium line is clearly visible. This root belongs to:

- a. Taraxacum officinalis**
- b. Sanguisorba officinalis
- c. Zingiber officinale
- d. Inula helenium
- e. Althaea officinalis

504. A pharmacist approached the chief manager of the pharmacy with a proposition to introduce an additional service for their customers - blood pressure measurement. What type of communication is it?

- a. Horizontal
- b. Vertical descending
- c. External
- d. Intra-level
- e. Vertical ascending**

505. To measure out a small amount of liquid, a stactometer is used. How many drops are there in 1 mL of purified water, if we are to use a standard stactometer?

- a. 10
- b. 50
- c. 20**
- d. 40
- e. 30

506. 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. Dissolve in alkaline medium
- c. First grind it into powder when it is dry or with small amount of solvent added
- d. Dissolve in the water free of redox substances
- e. Add equal amount of sodium chloride

507. 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

508. What lubricants are used in tablet manufacturing?

- a. Starch paste
- b. Calcium stearate, stearic acid
- c. Solutions of high-molecular compounds
- d. Water, ethanol
- e. Tween 80, Aerosil

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

- a. Corn starch
- b. Refined sugar
- c. Rice starch
- d. Mannitol
- e. Lactose

510. A pharmaceutical company produces belladonna tincture. In the process of standardization, excessive content of active substances was detected. How can this situation be remedied?

- a. This kind of deviation is not important
- b. Dilute the tincture with extractant to normal concentration
- c. Precipitate excessive active substances
- d. The tincture is a non-recoverable reject material
- e. Filter the tincture through adsorbent

511. "Immunal" immunostimulant is often prescribed against chronic upper respiratory tract infections. What herbal raw material is used in its production?

- a. Herba Echinaceae purpurea
- b. Radices Rhei
- c. Radices Ginseng
- d. Rhizomata et radices Eleuterococci
- e. Radices Araliae elata

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

- a. Pneumatic
- b. Ultrasonic
- c. Mechanical
- d. Circulation
- e. Acoustic

513. 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. Market stability
- b. Competitiveness of the drugs

- c. Novelty of the drugs
- d. Quality of the drugs
- e. Life cycle stage of the drugs

514. What medicine would be most advisable for symptomatic treatment of constipation in pregnant women?

- a. Bisacodyl
- b. Macrogol
- c. Lactulose
- d. Ononis herbal medicine
- e. Senadexine (sennosides A and B)

515. 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. Optical density
- b. Melting point
- c. Refractive index
- d. Specific gravity
- e. Angle of rotation

516. An analytical chemist identifies diphenhydramine hydrochloride (Dimedrol). What reagent produces a bright yellow coloring when reacting with this substance?

- a. Diluted hydrochloric acid
- b. Diluted phosphoric acid
- c. Concentrated sulfuric acid
- d. Anhydrous acetic acid
- e. Perchloric acid 0.1 M

517. A man with arterial hypertension was recommended the following to increase the antihypertensive effect of a diuretic:

- a. Increase the physical exertion
- b. Decrease the amount of table salt in the diet
- c. Increase the amount of table salt in the diet
- d. Decrease the physical exertion
- e. Increase the amount of liquids in the diet

518. In the process of price formation, a pharmaceutical company takes into account both internal and external factors. What factor is an external one?

- a. State regulation of price formation
- b. Marketing strategy of the company
- c. Manufacturing costs
- d. The stage of the product life cycle
- e. Marketing goals of the company

519. 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. 500 000 UAH
- b. 750 000 UAH
- c. 3 000 000 UAH
- d. 5 000 000 UAH
- e. 100 000 UAH

520. In the process of industrial production of rectal suppositories, certain substances insoluble both in water and suppository vehicle are introduced into this dosage form. Specify the optimal way to introduce these substances:

- a. Dissolve the substances in the water heated to 45°C
- b. Melt all of fatty vehicle and dissolve the substances there
- c. Introduce the substances as a suspension
- d. Melt a part of fatty vehicle and dissolve the substances there



e. Introduce the substances as an emulsion

521. Phytochemical workshop of a factory manufactures pancreatin. What is the source material for obtaining pancreatin?

- a. Heart of cattle
- b. Pancreas of pigs or cattle
- c. Egg white
- d. Lungs of cattle
- e. Gastric mucosa of pigs

522. What means of demand stimulation can be applied by pharmacy management among its employees?

- a. -
- b. Bonuses**
- c. In-store advertising
- d. Layout of medical products in shop-windows and on shelves
- e. Coupons

523. A doctor has prescribed a mixture containing several types of herbal raw material. Extracts of the following raw materials can be obtained in one infusion apparatus:

- a. Mint leaves, Althaea roots
- b. Mint leaves, flax seeds
- c. Mint leaves, buckthorn bark
- d. Mint leaves, chamomile flowers**
- e. Mint leaves, Arctostaphylos leaves

524. What is the purpose of bulking agents in production of tablets?

- a. To improve tablet breakup
- b. To obtain tablets of a certain mass**
- c. To improve granulate flowability
- d. To improve adhesion of particles to each other
- e. To improve the taste

525. A patient suffers from avitaminosis C) The physician has prescribed a course of phytotherapy. What herbal raw material is rich in this vitamin?

- a. Rhizoma Tormentillae
- b. Fructus Sorbi
- c. Cortex Quercus
- d. Folium Menthae piperitae
- e. Cortex Viburni opuli

526. Essential oil of a certain plant contains up to 80% of cineole. Specify the herbal raw material that is collected from this plant:

- a. Folia Eucalypti
- b. Folia Menthae piperitae
- c. Folia Melissa
- d. Folia Betulae
- e. Folia Absinthii

527. One of the substances listed below is textbfNOT a vitamin:

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

528. A patient with ischemic heart disease and chronic circulatory failure had been taking for a long time one of the drugs listed below. He developed hypokalemia, which resulted in cardiac rhythm disturbance and muscle weakness. What drug can lead to this complication as a side effect?

- a. Nifedipine
- b. Furosemide
- c. Spironolactone
- d. Propranolol
- e. Lisinopril

529. A woman with chronic bronchitis was prescribed azithromycin. After a time, she developed complaints of abdominal pain and distension, diarrhea, nausea, and vomiting. What side effect is observed in this patient?

- a. Dysbiosis
- b. Chondrotoxicity
- c. Nephrotoxicity
- d. Photosensitization
- e. Allergic response

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

- a. Benzaldehyde
- b. Hydroxyquinoline
- c. Furfural
- d. Resorcinol
- e. Aniline

531. Buckthorn bark and its derivative drugs are used as laxatives in medicine. According to the State Pharmacopoeia of Ukraine during chromatographic identification of buckthorn bark it is necessary to detect:

- a. Glucofrangulins
- b. Lanatosides
- c. Ginkgosides
- d. Purpurea glycosides
- e. Panaxosides

532. 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

533. 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

534. The doctor prescribed a patient 100 ml of thermopsis grass infusion. How much of the dry concentrate of thermopsis grass (1:1) should the pharmacist measure out for this patient?

- a. 0.5 g
- b. 0.2 g
- c. 0.1 g
- d. 0.25 g
- e. 0.3 g

535. A patient with arterial hypertension, who takes captopril, was prescribed a potassium-sparing diuretic, spironolactone. What complication can develop in the patient due to this combination of drugs?

- a. Hypernatremia
- b. Hypocalcemia
- c. Hyponatremia
- d. Hyperkalemia**
- e. Hypoglycemia

536. According to the current Ukrainian legislation all drugs are divided into two categories: prescription and nonprescription (over-the-counter). Which one of the listed drugs requires no prescription?

- a. Tramadol, capsules, 0,05 №10
- b. Clonidine, ampoules, 1 ml of 0,01% solution №10
- c. Ascorbic acid, 500 mg №30
- d. Phenobarbital, tablets, 100 mg №6
- e. Ketamine, 5% infusion solution, 2 ml №10

537. In the process of packing and transporting, herbal raw material often becomes partially comminuted or even powdered. Excessive comminution has negative effect on the herbal raw material appearance and its quality. What tool is used to separate these excessively comminuted particles from the rest of the herbal raw material?

- a. Filter
- b. Tweezers
- c. Mortars
- d. Sieve**
- e. Scalpel

538. An analytical laboratory has received a procaine hydrochloride substance for analysis. According to the State Pharmacopoeia of Ukraine limit content of heavy metals should be determined with the following reagent:

- a. Thioacetamide**
- b. Sulfomolybdenum
- c. Aminomethyl alizarin acetic acid
- d. Methoxyphenylacetic acid
- e. Hypophosphite

539. Medicinal dyes should be stored in a special cabinet. Which of the listed medical products is a dye:

- a. Brilliant green**
- b. Glucose
- c. Ethyl alcohol
- d. Hydrogen peroxide
- e. Ascorbic acid

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

- a. Amikacin
- b. Cephalexin
- c. Methacycline
- d. Ampicillin**
- e. Rifampicin

541. A pharmaceutical company uses various methods of advertising. What method of advertising foresees its distribution to everyone, not just the target audience?

- a. Out-of-home advertising
- b. Professional-targeted advertising
- c. Advertising souvenirs
- d. Postal cards and pamphlets
- e. -

542. 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. 90% of salary
- b. 75% of salary
- c. 60% of salary
- d. 50% of salary
- e. 100% of salary

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

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

544. 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. Flavonoids
- b. Coumarins
- c. Tannins
- d. Saponins
- e. Anthracene derivatives

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

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

546. What antibacterial agent is a part of the eradication therapy for H. pylori during the treatment of peptic ulcer disease of the stomach?

- a. Meropenem
- b. Gentamicin
- c. Ceftriaxone
- d. Biseptol (Co-trimoxazole)
- e. Clarithromycin

547. Select a non-steroid estrogen from the list below:

- a. Retabolil (Nandrolone)
- b. Prednisolone
- c. Progesterone
- d. Synoestrol (Hexestrol)
- e. Adrenalin

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

- a. Saponins
- b. Cardiac glycosides
- c. Lignans
- d. Anthracene derivatives
- e. Coumarins

549. 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. Supplier representative
- b. Lawyer
- c. Authorized person

- d. Pharmacist on duty
- e. Accountant

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

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

551. A pharmacist has prepared an oak bark decoction. What is the ratio of the herbal raw material to extractant?

- a. 1:10
- b. 1:5
- c. 1:400
- d. 1:20
- e. 1:30

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

- a. Mint leaves
- b. Thermopsis grass
- c. Buckthorn bark
- d. Arctostaphylos leaves
- e. Marshmallow roots

553. 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. 50 days
- b. 126 days
- c. 115 days
- d. 70 days
- e. 100 days

554. What imidazole derivative affects anaerobic microorganisms and protozoa and is effective against mixed infections?

- a. Camphor
- b. Caffeine
- c. Dibazol (Bendazol)
- d. Asparcam (Potassium aspartate and magnesium aspartate)
- e. Metronidazole

555. 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. Unrealized
- b. Irregular
- c. Irrational
- d. Incorrect
- e. Inadequate

556. The head manager of a pharmacy calls the manager of a pharmaceutical wholesaler to clarify the terms of supply. What type of communication is it?

- a. Horizontal
- b. Interlevel
- c. External
- d. Vertical
- e. Internal

557. In his line of work a dispensing chemist tries to satisfy a number of contradictory requirements, which has resulted in emotional overload, stress, and self-doubt. What type of conflict has arisen in this case?

- a. -
- b. Individual vs. group
- c. Intrapersonal
- d. Intergroup
- e. Interorganizational

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

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

559. 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

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

- a. Starch, glucose, kaolinite, magnesium oxide, sodium bicarbonate
- b. Purified water, starch glue, sugar syrup, gelatin, carboxymethylcellulose solution
- c. Methylcellulose, polyvinylpyrrolidone, acetylphthalylcellulose
- d. Stearic acid, calcium and magnesium stearate, starch, talcum
- e. Sugar, glucose, essential oils, menthol, fruit juice concentrates, indigo carmine, iron oxide, mannitol

561. The procedure for circulation of narcotic drugs, psychotropic substances, and precursors in pharmacies is regulated by law. Which one of the medicines listed below is a narcotic drug?

- a. Atropine sulfate
- b. Ethyl alcohol
- c. Tramadol
- d. Prednisolone
- e. Zopiclone

562. 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. Pure monopoly
- b. Monopolistic competition
- c. Economic planning
- d. Pure competition
- e. Oligopoly

563. 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. 3%
- c. 10%
- d. 2%

e. 30%

564. A medicinal plant contains hydroxycoumarins and is used in production of venotonic agents. Name the herbal raw material harvested from this plant:

- a. Fructus Ammi majoris
- b. Herba Meliloti
- c. Semina Hippocastani**
- d. Fructus Dauci carotae
- e. Fructus Pastinacae sativae

565. An 18-year-old girl was hospitalized with complaints of polyuria, dry skin, loss of weight, and general weakness. She was diagnosed with diabetes mellitus type I, first diagnosed. What drug should be taken first in the course of the therapy?

- a. Glibenclamid
- b. Metformin
- c. Exenatide
- d. Arphasetin
- e. Insulin**

566. 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 chelidonine. Name this plant:

- a. Chelidonium majus**
- b. Berberis vulgaris
- c. Atropa belladonna
- d. Hyoscyamus niger
- e. Papaver somniferum

567. Commercial and financial activity of a pharmacy involves using returnable tare. Which of the following containers are returned to the supplier?

- a. Glassware
- b. Metal cylinders**
- c. Packaging materials
- d. Paper boxes
- e. Glass-stoppered bottles

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

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

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

570. What medicine is recommended to reduce the risk of gastrointestinal bleeding during a long-term treatment with an acetylsalicylic acid-based antiaggregant?

- a. Prednisolone
- b. Ceftriaxone
- c. Metamizole sodium
- d. Omeprazole**
- e. Spironolactone

571. What fatty oil should be used to make an ointment with reparative properties?

- a. Oleum Cucurbitae
- b. Oleum Lini**
- c. Oleum Persicorum
- d. Oleum Cacao
- e. Oleum Jecoris

572. After mineralization of bromocamphor with zinc dust, bromide-ions can be detected in the filtrate in the presence of  $\text{CHCl}_3$  by performing a reaction with:

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

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

- a. Growth
- b. Saturation
- c. Introduction**
- d. Decline
- e. Maturity

574. Several independent mediators work in resale of medical equipment. What group of mediators includes persons and legal entities that specialize in sales of durable goods that require considerable after-sales service?

- a. Commission agent
- b. Broker
- c. Dealer**
- d. Agent
- e. Consignee

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

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

576. 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

577. 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. -
- b. Reduction of authority
- c. Dissolution of authority
- d. Delegation of authority**
- e. Withdrawal of authority

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

579. A pharmaceutical company produces soft dosage forms. What indicator should be measured additionally for the soft dosage forms that are intended for application on heavily damaged skin?

- a. Sterility**
- b. Identification
- c. Microbiological purity
- d. Quantitative determination
- e. pH

580. Standard stactometer divides 1 ml of water into:

- a. 25 drops
- b. 30 drops
- c. 10 drops
- d. 15 drops
- e. 20 drops**

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

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

582. To restore the demand for a traditional medicine, the manufacturer has improved its characteristics, increased advertising costs, reduced prices, and involved new intermediaries. What type of marketing is used in this case?

- a. -
- b. Synchromarketing
- c. Conversion marketing
- d. Remarketing**
- e. Countermarketing

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

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

584. 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

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

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

586. A pharmaceutical company produces essential oils via a method that consists of essential oil transfer into gas phase followed by its absorption with fats and then its extraction with alcohol. Name this method:

- a. Extraction
- b. Enfleurage**
- c. Hydrodistillation
- d. Compression
- e. Dynamic sorption

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

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

588. 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

589. A pharmacy has received a prescription for tincture. What herbal raw material can be used to make this dosage form?

- a. Oak bark
- b. Valerian rootstock**
- c. Buckthorn bark
- d. Rhubarb roots
- e. Arrow-wood bark

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

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

591. Pharmacy workers can receive an extra pay, if they combine several professions or positions, take upon themselves the duties of a temporarily absent employee, or have to manage an increased workload. In this case, the maximum possible bonus constitutes the following percentage of the employee's salary:

- a. 10%
- b. 40%
- c. 20%
- d. 50%**
- e. 30%

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

593. 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. Alcoholic hydroxyl
- b. Ester group
- c. Amide group
- d. Phenolic hydroxyl
- e. Aldehyde group

594. A pharmacist prepares cocoa butter-based round vaginal suppositories with less than 5% of citric acid. Specify the most rational approach to introduction of the active ingredient into the vehicle:

- a. Dissolve in vaseline oil
- b. Dissolve in minimal quantity of purified water**
- c. Dissolve in alcohol
- d. Dissolve in Dimexid (Dimethylsulfoxide)
- e. Dissolve in molten cocoa butter

595. 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

596. 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

597. What pharmacological group of drugs **CANNOT** be combined with expectorants?

- a. Antibacterial drugs
- b. Antitussive drugs**
- c. Polyvitamins
- d. Decongestants
- e. Mucolytic agents

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

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

599. Camomile flowers are a popular medicinal substance in scientific medicine. What plant is the

source of this herbal raw material?

- a. Anthemis arvensis
- b. Anthemis cotula
- c. Tripleurospermum inodorum
- d. Chamomilla recutita**
- e. Leucanthemum vulgare

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

- a. The group leader receives authority from the group
- b. They form spontaneously
- c. They resist changes in the organization
- d. They are created to implement the production process**
- e. They form as a result of interest, sympathy

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

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

602. According to the law regulating labour remuneration, the businesses must establish their compensation plan in the following document:

- a. Collective agreement**
- b. Job description
- c. Contract of delivery
- d. Statement
- e. Decree

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

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

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

- a. 1.0-4.0 g
- b. 3.0-7.0 g
- c. 1.5-6.0 g**
- d. 2.0-6.5 g
- e. 4.0-7.5 g

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

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

606. The head manager of a pharmacy, together with the heads of its departments, decided to expand the selection of products on sale at this pharmacy by expanding the range of products for diabetic nutrition. What type of managerial decision is it?

- a. Collegial**
- b. -

- c. Personal
- d. Individual
- e. Received from a higher-level organization

607. A medical facility purchases antitumor drugs directly from a domestic manufacturer. What is the level of the sales channel used in this case?

- a. One-level channel
- b. Zero-level channel**
- c. Four-level channel
- d. Two-level channel
- e. Three-level channel

608. A dispensing chemist makes a research into the pharmaceutical market. For this purpose he uses scientific publications and statistical data. What type of marketing research is it?

- a. Observation
- b. Panel research
- c. Survey
- d. Theoretical research
- e. Field research

609. A 63-year-old man suffering from ischemic heart disease was diagnosed with angle closure glaucoma. What group of drugs is CONTRAINDICATED in this case?

- a. Calcium antagonists
- b. Anticoagulants
- c. Statins
- d. beta-adrenergic blockers
- e. Nitrates

610. Valerian roots and rhizomes are processed in the phytochemistry workshop to produce tinctures and thick extracts that are the components of combined sedatives. Name the group of bioactive compounds that includes valerian valepotriates, - valtrate, acevaltrate, and dihydrovaltrate:

- a. Essential oils
- b. Saponins
- c. Iridoids**
- d. Alkaloids
- e. Polysaccharides

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

612. "Balance" accounting form consists of two parts - assets and liabilities. Select from the list only the liabilities.

- a. Retained earnings, intangible assets
- b. Bank loan, accounts payable**
- c. Accounts receivable, prepaid expenses
- d. Authorized capital, fixed assets
- e. Fixed assets, accounts receivable

613. A pharmacy has submitted its financial report for the first quarter of 2021. It contains the following information: turnover - 92 000 UAH, cost price of the goods sold - 60 000 UAH. Therefore, the price markup for this period amounts to:

- a. 60 000 UAH
- b. 90 000 UAH

- c. 2 000 UAH
- d. 62 000 UAH
- e. 32 000 UAH

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

- a. Solid hemispherical receptacle
- b. Curved hemispherical receptacle with membranous bracts
- c. Solid spherical receptacle
- d. Spherical receptacle with membranous bracts
- e. Conical, glabrous, and hollow receptacle

615. 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. Targeted selection interview
- b. Submission of a resume
- c. Preliminary interview
- d. Telephone interview
- e. Filling in a questionnaire

616. 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

617. 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

618. To identify acetylsalicylic acid, the substance is subjected to alkaline hydrolysis. After acidification of the reaction mixture, acetic acid is formed, which can be detected using the reaction with ethanol in the presence of concentrated sulfuric acid. What reaction product causes the characteristic odor in this case?

- a. Benzaldehyde
- b. Ammonia
- c. Ethyl acetate
- d. Sulfur dioxide
- e. Pyridine

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

620. A dispensing chemist has a total insured work record of 10 years. It means that the dispensing chemist can expect the following amount of temporary disability benefits:

- a. 80% of the average salary
- b. 50% of the average salary
- c. 70% of the average salary

d. 100% of the average salary

e. 60% of the average salary

621. The "Medpharm" wholesale pharmaceutical firm employs a system that encourages its managers to achieve better results in sales by assigning them points for surpassing their sale goals. The points then become converted into material remuneration. This way the company management carries out the following management function:

a. Organization

b. Control

c. Planning

d. Delegation

e. Motivation

622. During pharmaceutical analysis of a medicinal substance, its reaction with antipyrine (phenazone) was conducted in the presence of dilute hydrochloric acid. What compounds are present there, as indicated by the green coloring that appeared in the process of the analysis?

a. Bromides

b. Iodides

c. Sulfates

d. Nitrites

e. Fluorides

623. What herbal raw material is used for the industrial production of Quercetin medicine?

a. Fructus Hippophaes rhamnoides

b. Flores Helichrysi arenarii

c. Herba Violae tricoloris

d. Herba Polygonii avicularis

e. Fructus Sophorae japonicae

624. A patient is prescribed a 3% alcohol solution of boric acid. What concentration of ethanol should be taken to prepare this solution according to the normative documents?

a. 60%

b. 90%

c. 40%

d. 95%

e. 70%

625. 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. Barium chloride

c. Thioglycolic acid

d. Sodium hypophosphite

e. Hydroxyquinoline

626. 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)

627. Simultaneous application of doxycycline hydrochloride and oral contraceptive causes:

a. Increase of the antibacterial effect of doxycycline

b. Reduction of the antibacterial effect of doxycycline

c. Increase of oral contraceptives effectiveness

d. Reduction of oral contraceptives effectiveness

e. -

628. 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

629. An analytical chemist should use the following solution to identify sodium-containing substances:

- a. Potassium carbonate
- b. Sodium citrate
- c. Potassium pyroantimonate
- d. Barium hydroxide
- e. Potassium permanganate

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

- a. Compounding and production department
- b. Department of finished dosage forms
- c. Department of over-the-counter drugs
- d. Department of curative cosmetics
- e. Inventory department

631. A pharmacy visitor approached the pharmacist with complaints of constricting retrosternal pain that radiates under the left scapula. The pain occurred after physical exertion and lasts approximately 5 minutes already. What medicine should be recommended to this visitor to stop the pain attack?

- a. Captopril
- b. Diclofenac sodium
- c. Drotaverine
- d. Nitroglycerin
- e. Bisoprolol

632. Name the optimal vehicle for soluble vaginal suppositories:

- a. Hard fat
- b. Cocoa butter
- c. Fat
- d. Polyethylene oxide
- e. Glycerine

633. Merchandising is a complex of communication techniques that aim to increase the sales in the pharmacies. The main goal of merchandising is:

- a. Decrease of the competition between the drug analogues
- b. Price-cutting for unpopular medicines
- c. Quick sales of the whole range of goods on offer in the pharmacies and an overall increase of sales
- d. -
- e. Expanding the range of pharmaceutical goods

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

635. The dispensing chemist of a pharmacy has prepared 5 formulations. Which one of them requires total chemical control?

- a. Baby powder



- b. Riboflavin-containing powders
- c. Streptocide (sulfanilamide) ointment
- d. Atropine sulfate eyedrops
- e. Kvater's mixture

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

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

638. A pharmaceutical factory uses dragee machines to apply multiple layers of active substances and adjuvants to sugar granules. The end product of this process is the following dosage form:

- a. Dragee
- b. Microcapsules
- c. Spansules with polymer coating
- d. Dragee tablets
- e. Granules

639. Erythromycin belongs to the following type of antibiotics based on its chemical structure:

- a. Polypeptides
- b. beta-lactams
- c. Aromatic antibiotics
- d. Polyene antibiotics
- e. Macrolides

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

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

- a. Decreased absorption in the gastrointestinal tract
- b. Changed volume of distribution
- c. Increased absorption in the gastrointestinal tract
- d. Inhibition of the prothrombin synthesis
- e. Disorder of protein binding

642. 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 30%
- b. At least 20%
- c. At least 65%

- d. At least 50%
- e. At least 40%

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

- a. Preservative
- b. Vehicle
- c. Densifier**
- d. Emulsifier
- e. Dispersing agent for powders

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

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

645. What medicines should be listed at the beginning of an extemporaneous drug formulation according to the regulations?

- a. Solutions
- b. Narcotic substances**
- c. Substances that are hard to comminute
- d. Medicines included in the Essential Medicines List
- e. All medicines are written in a random order

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

647. An employee of an analytical and quality control laboratory performs a rapid analysis of morphine hydrochloride. In this case, the presence of phenolic hydroxyl can be confirmed by a reaction with a solution of:

- a.  $K_3[Fe(CN)_6]$
- b. Concentrated  $HNO_3$
- c.  $FeCl_3$**
- d.  $AgNO_3$
- e.  $NH_3$

648. What concept can be described as "...an area of exchange with its characteristic system of economic relations between goods manufacturers and consumers"?

- a. Marketing
- b. Agreement
- c. Management
- d. Market**
- e. Sales

649. In the process of phytochemical examination of buckthorn bark, the reaction with alkaline solution resulted in red coloring, which indicates the presence of the following:

- a. Alkaloids
- b. Flavonoids
- c. Saponins
- d. Anthracene derivatives**
- e. Slime

650. To identify a medicinal substance, an analytical chemist performed a reaction of azo dye formation. This reaction is characteristic of the following medicine:

- a. Acetylsalicylic acid
- b. Chlorpropamide
- c. Resorcinol
- d. Phenyl salicylate

e. Benzocaine

651. 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. Balance sheet
- b. Receipts and expenditures report
- c. Double entry
- d. Turnover balance sheet
- e. Business transactions log book

652. When obtaining individual substances, the choice of an extractant is determined mainly by its:

- a. Cost
- b. Thermostability
- c. Selectivity toward active substances
- d. Anti-hydrolysis effect
- e. Pharmacological inertness

653. To identify ethanol an analytical chemist needs to conduct a:

- a. Iodoform test
- b. Ninhydrin test
- c. Hydroxamate test
- d. Murexide test
- e. Thalleioquin test

654. 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. Selective method
- c. Integrated method
- d. Intensive method
- e. -

655. The material accountability of an employee is determined by the written agreement. When does the agreement of employee's material accountability need to be concluded anew?

- a. Change of the chief accountant
- b. Replacement of over 30% of the initial personnel
- c. Change of the head manager or replacement of over 50% of the initial personnel
- d. Change of the janitor
- e. Change of the dispensing chemist

656. When studying the demand for influenza vaccines, it was found that a pharmacy is insufficiently supplied with these vaccines. What type of demand is it?

- a. Irrational
- b. Satisfied
- c. Unsatisfied
- d. Hidden
- e. Negative

657. What qualitative reaction proves the presence of anthracene-derived compounds in a herbal raw material?

- a. Reaction with Fehling's reagent
- b. Reaction with an alkali

- c. Reaction with iron sulfate
- d. Reaction with Dragendorff's reagent
- e. Reaction with ammonium iron(III) sulfate

658. What adjuvants are added to a tablet mass to promote its breakup?

- a. Antioxidants
- b. Fillers
- c. Lubricants
- d. Disintegrants**
- e. Thickeners

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

- a. Introduction as a suspension into the prepared emulsion
- b. Dissolution in oil
- c. Comminution with the water intended for the dilution of the primary emulsion
- d. Dissolution in water to prepare the primary emulsion
- e. Dissolution in the prepared emulsion

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

- a. On separate shelves and in separate shopwindows**
- b. By their pharmacotherapy group
- c. By their application
- d. By their Anatomical Therapeutic Chemical Classification
- e. Alongside medicines

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

- a. Infusion therapeutic system
- b. Matrix tablet
- c. OROS tablet
- d. Liposome**
- e. Transdermal therapeutic system

662. 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

663. Presence of nitrate radical in metronidazole structure can be confirmed by reduction of nitrate radical to amino group with production of:

- a. Indophenol
- b. Azo dye**
- c. Murexide
- d. Thiochrome
- e. Iodoform

664. 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

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

- a. Cephalosprins
- b. Carbapenems
- c. Aminoglycosides
- d. Macrolides**
- e. Penicillins

666. An analytical pharmacist uses cerimetry for quantification of nifedipine. What indicator is used in this method?

- a. Phenolphthalein
- b. Ferroin
- c. Tropeolin 00
- d. Potassium chromate
- e. Methyl orange

667. 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

668. 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

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

- a. Acridine
- b. Furfural
- c. Hydroxyquinoline
- d. Methyl isothiocyanate**
- e. Naphthoquinone

670. 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%

671. 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. Bolus alba
- b. Talcum
- c. Starch
- d. Zinc oxide

**e. Streptocid**

672. What medicinal substance can be mixed with the powder mass without an additional comminution?

- a. Menthol
- b. Salicylic acid
- c. Streptocide (Sulfanilamide)

**d. Starch**

- e. Camphor

673. Specialists of a pharmaceutical enterprise confirm the identity of *Cassia acutifolia* herbal raw material. During reaction with alkali it developed cherry-red coloring. What substances were identified?

- a. Iridoids

**b. Anthraquinones**

- c. Tannins
- d. Alkaloids
- e. Glycosides

674. A woman wants to stock the home first aid kit for her 4-month-old baby. She asked a dispensing chemist to recommend her an antipyretic for this purpose. What medicine and what dosage form would you recommend in this case?

- a. Acetylsalicylic acid powder
- b. Ibuprofen tablets

**c. Paracetamol rectal suppositories**

- d. Diclofenac sodium tablets
- e. Acetylsalicylic acid tablets

675. Rectal suppositories, each containing 0.1 g of euphyllin (aminophylline), are being hand-rolled for the patient. What amount of vehicle should be taken for one suppository, if its mass is unspecified in the formulation?

- a. 1.9 g
- b. 2.9 g**
- c. 3.9 g
- d. 1.4 g
- e. 2.4 g

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

- a. Ester bond
- b. Residue of n-aminobenzoic acid

**c. Bound hydrochloric acid**

- d. Unsubstituted aromatic cycle
- e. Diethylamino group

677. 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

678. 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**

679. A pharmacy visitor periodically feels constricting pain behind the sternum. Explain to this visitor, what contraindication exists for taking nitroglycerin.

- a. Heart failure
- b. Pulmonary fibrosis
- c. Kidney failure
- d. Angle-closure glaucoma**
- e. Peptic ulcer disease

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

681. A dispensing chemist performs quantitative determination of nifedipine substance, using the method of cerimetry. What indicator should be used in this method, according to the State Pharmacopoeia of Ukraine?

- a. Potassium chromate
- b. Bromphenol blue
- c. Phenolphthalein
- d. Ferroin**
- e. Methyl orange

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

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

684. Various groups of propellants are used in production of aerosols. What group does carbon dioxide CO<sub>2</sub> belong to?

- a. Volatile gases
- b. Rarefied gases
- c. Non-volatile gases
- d. Liquefied gases
- e. Compressed gases**

685. 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. Ion-exchange chromatography**
- c. Adsorption chromatography
- d. Thin layer chromatography
- e. Paper chromatography

686. 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. Tolerance
- b. Withdrawal syndrome
- c. Sensitization
- d. Cumulation
- e. Idiosyncrasy

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

- a. Dry residue
- b. Purification methods
- c. Moisture content
- d. Particle size
- e. Acid value and peroxide value

688. Pharmacy employees receive their salary payments twice a month. What should the cashier do, if a pay day coincides with a holiday?

- a. There are no regulations regarding payment of salaries in this case
- b. To pay the salaries 10 days earlier
- c. To pay the salaries after the holiday
- d. To pay the salaries on the holiday
- e. To pay the salaries one day earlier

689. A substance was received for analysis. The substance is a round seed 1-1,8 mm in diameter, yellow with bluish tint. When mashed with water, emits characteristic irritant odor; is sharp and acrid to taste. The raw material can be identified as:

- a. Nigella seeds
- b. Mustard seeds
- c. Flax seeds
- d. Fenugreek seeds
- e. Plantago psyllium seeds

690. Calcium gluconate is being tested for presence of admixtures of saccharose and reducing sugars with copper-tartrate reagent. If these admixtures are present the substance colors:

- a. Turquoise
- b. Green
- c. Red
- d. Blue
- e. White

691. 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. Sodium nitrite solution
- b. Zinc sulfate solution
- c. Perchloric acid solution
- d. Potassium bromate solution
- e. Sodium edetate solution

692. 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. 300 mg
- b. 400 mg
- c. 100 mg
- d. 500 mg
- e. 200 mg



693. Pharmaceutical logistics is aimed at advertising, search for customers, entering into agreements, after-sales service, and transportation. What type of logistics is it?

- a. Information
- b. Sales**
- c. Procurement
- d. Manufacturing
- e. Human resources

694. The following substance is used as an extractant in production of liquid extracts:

- a. Ethanol**
- b. Acetone
- c. Glycerine
- d. Dichloroethane
- e. Chloroform

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

696. A pharmacy supplies the surgical ward of a hospital. What document enables the dispensing chemist to supply the goods:

- a. Receipt log book
- b. Consolidated register
- c. Purchase order**
- d. Report on the movement of packaging
- e. Product revaluation notice

697. Specify the fluid used to coat the forms for pouring of the suppositories with hydrophilic vehicles:

- a. Glycerine
- b. Glycerine-water solution
- c. Vaseline (petroleum jelly)**
- d. Purified water
- e. Dimethylsulfoxide

698. A patient suffering from bronchial asthma was diagnosed with essential hypertension. What antihypertensive drug is contraindicated for this patient?

- a. Verapamil
- b. Hypothiazid (Hydrochlorothiazide)
- c. Captopril
- d. Amlodipine
- e. Propranolol**

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

700. 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. Benzoic acid**

- c. Nicotinic acid
- d. Ascorbic acid
- e. Salicylic acid

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

702. 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

703. An analytical chemist can quantitatively determine the thiamine bromide content in powders by means of:

- a. Nitritometric titration
- b. Complexometric titration
- c. Alkalimetry
- d. Permanganatometry
- e. Bromometry

704. Paracetamol reaction with hydrochloric acid, followed by addition of potassium dichromate, produces the following:

- a. Triphenylmethane dye
- b. Schiff base
- c. Indophenol dye
- d. Aurin dye
- e. Azo dye

705. A pharmaceutical company produces Lugol's iodine solution. By type of solvent this solution belongs to the following group:

- a. Water solutions
- b. Chloroform solutions
- c. Alcohol solutions
- d. Glycerine solutions
- e. Oil solutions

706. The personal qualities of the head of a pharmaceutical company are attractive to the subordinates who want to emulate their boss in everything. What form of power of the manager is observed in this situation?

- a. Coercive power
- b. Referent power
- c. Legitimate power
- d. -
- e. Power based on fear

707. 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

708. Specify the optimal method for industrial production of suppositories:

- a. Pressing
- b. Stamping
- c. Hand-rolling
- d. Pouring into moulds
- e. Lyophilization

709. The preparations of *Silybum marianum*, "Silibor" and "Carsil", have hepatoprotective action. What parts of *Silybum marianum* are the herbal raw material from which these medicines are being made?

- a. Flowers
- b. Seeds
- c. Roots
- d. Leaves
- e. Grass

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

711. What document is used during transactions with consumers, confirming the fact of sale or return of goods and the fact of receiving a payment or making a refund?

- a. Request for a cash transfer
- b. Transactions ledger
- c. Fiscal cash receipt for the goods/services
- d. Cash book
- e. Accompanying statement to the bag with cash

712. Every pharmacy as a business has its income and expenditure operations. What business transaction will result in a summary increase of stocked goods?

- a. Receipt of low-value wearing goods
- b. Money transfer from a bank to the cash desk
- c. Issuing money to be accounted for
- d. Debt recovery from a person accountable
- e. Goods receipt from the supplier

713. 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

714. 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. Butamirate
- d. Salbutamol
- e. Codeine phosphate

715. A patient, who has been taking warfarin for a long time, was recommended to take acetylsalicylic acid because of hyperthermic syndrome. What complication can be caused by such a combination of medicines?

- a. Hyperkalemia
- b. Hypokalemia
- c. Thrombus formation
- d. Hemorrhages**
- e. Dysbacteriosis

716. A pharmacist has prepared a solid dosage form - a compound powder. What technological operation is NOT a part of preparation process in this case?

- a. Dissolution**
- b. Packing
- c. Comminution
- d. Dosing
- e. Mixing

717. Representatives of the family Solanaceae are widely used in medical practice as alkaloid-containing plants. Which representative is the source for production of semi-synthetic steroid hormones?

- a. Solanum laciniatum**
- b. Solanum tuberosum
- c. Atropa belladonna
- d. Hyoscyamus niger
- e. Datura Stramonium

718. 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

719. A group of independent intermediaries operates on a regional market. They sell medicines on their own behalf and at their own cost. Such intermediaries are called:

- a. Commission agents
- b. Dealers**
- c. Consignees
- d. Brokers
- e. Agents

720. A medical facility located in Kyiv buys its diagnostic tools from a domestic manufacturer. What level of distribution channel is it?

- a. Zero-level channel**
- b. Three-level channel
- c. One-level channel
- d. Two-level channel
- e. Four-level channel

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

- a. Flowers**
- b. Rhizomes
- c. Fruits
- d. Grass
- e. Roots

722. 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

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

- a. Reference to the drug as the most effective
- b. References to the cases of successful drug use
- c. Comparison with other medical products
- d. Warning that self-medication can be harmful to health
- e. Naming and mentioning celebrities, movie and cartoon characters, competent authorities

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

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

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

- a. Socio-psychological
- b. Economic
- c. Technological
- d. Administrative
- e. -

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

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

727. A phytochemical department of a factory produces Calendula tincture. What herbal raw material is used in the manufacturing process?

- a. Grass
- b. Leaves and essential oil
- c. Roots, rhizomes, and grass
- d. Roots
- e. Flowers

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

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

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

- a. 1 month before the closure
- b. 3 months before the closure
- c. 20 working days before the closure
- d. Notification is optional
- e. 10 working days before the closure

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

- a. Dissolution in the minimal amount of alcohol-water-glycerin mixture
- b. Dissolution in the melted base
- c. Dissolution in the minimal amount of water
- d. Dissolution in the minimal amount of castor oil
- e. Dissolution in ethyl alcohol

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

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

733. A pharmacist has prepared a liquid mixture. What component was added last into the vial?

- a. Purified water
- b. Tincture of valerian
- c. 20% sodium bromide solution
- d. Simple syrup
- e. Potassium bromide

734. A 43-year-old patient with a severe form of rheumatoid arthritis has been administered a certain drug for background therapy. Specify this drug:

- a. Methylprednisolone
- b. Nimesulide
- c. Diclofenac sodium
- d. Prednisolone
- e. Methotrexate

735. The phytochemical department of a pharmaceutical manufacture produces maximally purified extracts. In the process, specific methods are used for the extract purification. Which description corresponds with the dialysis method?

- a. The process of heating the extract
- b. The characteristic of biopolymer molecules that does not allow them to pass through semi-permeable membranes
- c. The process of gas absorption
- d. The process of electrolyte action
- e. The process of extraction from one liquid using another liquid

736. Adonis-derived drugs are popular cardiotonic agents. The stock of adonis herbal raw material is assessed by the method of:

- a. Permanent quadrates

- b. Projective cover
- c. By eye
- d. Geodesic
- e. Model specimen

737. The chemical name of 2-benzyl-1H-benzimidazole hydrochloride corresponds with the following medicinal substance:

- a. Omeprazole
- b. Phenazepam
- c. Indometacin
- d. Vicasol (Menadione)
- e. Dibazol (Bendazolum)**

738. A man came to a pharmacy asking for a litholytic and diuretic drug <<Marelin>>. 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. Dryopteris filix-mas
- b. Sanguisorba officinalis
- c. Rubia tinctorum**
- d. Valeriana officinalis
- e. Rhodiola rosea

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

- a. Prazosin
- b. Furosemide
- c. Triamterene**
- d. Diltiazem
- e. Bisoprolol

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

- a. Withdrawing sales proceeds for the transfer to the current account
- b. Salary payments
- c. Issuing a cash sum to be accounted for
- d. Payment for the goods purchased for the business needs
- e. Receipt of funds for advance salary payments**

741. An analytical chemist conducts quantitative determination of ibuprofen (substance) by means of direct alkalimetry. The following solution will be an indicator in this case:

- a. Ammonium iron (III) sulfate
- b. Tropeolin 00
- c. Potassium chromate
- d. Phenolphthalein**
- e. Mordant black

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

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

743. A pharmaceutical warehouse has received a batch of herbal raw material - hawthorn flowers. Merchandise analysis revealed in one of the sacks significant amount of bird-cherry flowers besides the hawthorn. What quality assessment of the herbal raw material should be performed?

- a. Mineral admixtures
- b. Ash values (Total ash)

c. Acceptable admixtures

d. Extractive values

e. Moisture content

744. Each medical product that a pharmacy receives should have its quality certificate. How long should these certificates be kept by a pharmacy?

a. 2 years

b. 6 years

c. 3 years

d. 5 years

e. 1 year

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

a. Ointment

b. Liniment

c. Gel

d. Paste

e. Cream

746. What activity of a pharmaceutical company includes improvement of employees' working and living conditions, healthcare and medical insurance and other means of social development?

a. Financial activity

b. Social responsibility

c. Commercial activity

d. Charity

e. Industrial activity

747. 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. Own address, license number and its date of issue

b. Medical facility seal

c. License number

d. Own address

e. Surname and initials of the doctor

748. 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. Eligibility for registration in the List of medicines and medical products with state-controlled prices

d. Ensuring the necessary quality of medicines

e. It is a mandatory condition to be able to sell medicines at a reduced price to certain population groups

749. 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. Hydrocortisone acetate

c. Betamethasone dipropionate

d. Prednisolone

e. Prednisone

750. The analyst determines quantitative content of sodium benzoate by means of acidimetry in non-aqueous medium according to the State Pharmacopoeia of Ukraine. What reagent is used as a solvent in this case?

a. Pyridine

b. Dimethyl formamide



- c. Anhydrous acetic acid
- d. Sulfanilic acid
- e. Concentrated sulfuric acid

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

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

752. A 46-year-old man came to a dispensing chemist complaining of a dry cough. What antitussive drug can he be recommended?

- a. Bromhexine
- b. Oxeladin
- c. Tripsin
- d. Acetylcysteine
- e. Sodium bicarbonate

753. A refractometer is used to identify and test the glycerine substance. What parameter is measured using this device?

- a. Melting point
- b. Angle of rotation
- c. Dynamic viscosity
- d. Refractive index
- e. Optical density

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

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

755. A pharmaceutical company can use different types of marketing, depending on the demand for the medicinal products that it produces. What type of demand makes it advisable to implement demarketing?

- a. Absent
- b. Declining
- c. Satisfied
- d. Negative
- e. Excessive

756. What reagent is used to identify sodium sulfate?

- a. Barium chloride
- b. Calcium chloride
- c. Iron(III) chloride
- d. Cobalt chloride
- e. Silver nitrate

757. 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

758. A pharmacy has received a prescription for colloid solution. Name this solution:

- a. Sodium chloride solution
- b. Nonaqueous solution
- c. Collargol solution**
- d. Burow's solution
- e. 5% glucose solution

759. Quality of dried extracts is assessed according to several criteria. Specify the highest acceptable amount of moisture in dried extracts according to the State Pharmacopoeia of Ukraine:

- a. 20%
- b. 95%
- c. 5%
- d. 75%
- e. 25%

760. An analytical chemist uses nitritometry for quantitative determination of procainamide hydrochloride. What indicator is used in this case to determine the titration endpoint?

- a. Methyl orange
- b. Phenolphthalein
- c. Xylenol orange
- d. Methyl red
- e. Tropaeolin OO**

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

762. 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. Acyclovir
- c. Metronidazole
- d. Benzylpenicillin (Penicillin G)
- e. Doxycycline hydrochloride

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

764. Pharmacies use cash registers during the sales of medicines. Name the document for the accounting of Z-reports:

- a. Cash book
- b. Prescription logbook
- c. Customers ledger
- d. Transactions ledger**
- e. Receipt book

765. According to the State Pharmacopoeia of Ukraine monograph, alkalimetry should be used for the quantitative determination of the nicotinic acid. What is used as an indicator in this case?

- a. Potassium chromate

- b. Calconcarbonic acid
- c. Sodium eosinate
- d. Phenolphthalein**
- e. Methylene blue

766. 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**

767. When activated charcoal is included into the combined therapy, the sorption of other medicines:

- a. Activates
- b. Accelerates
- c. Decreases**
- d. Increases
- e. Remains unchanged

768. 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. Diclofenac sodium
- b. Indomethacin
- c. Ibuprofen
- d. Acetylsalicylic acid
- e. Celecoxib**

769. What type of marketing should be used if the demand for some medicines in the pharmaceutical market is negative?

- a. Conversion marketing**
- b. Synchromarketing
- c. Incentive marketing
- d. Demarketing
- e. Remarketing

770. 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

771. Various admixtures are possible in the process of harvesting, drying, and primary processing of herbal raw material. Organic admixtures include:

- a. Non-harvested parts of the same plant**
- b. Metallic objects
- c. Sand
- d. Soil particles
- e. Glass fragments

772. In the process of industrial production, certain adjuvants are included in the soft dosage forms as pH regulators. Name these adjuvants:

- a. Benzalkonium chloride, benzyl alcohol
- b. Citric acid, sodium phosphate salts**
- c. Glycerine, dimethyl sulfoxide
- d. Sodium lauryl sulfate, tween emulsifiers

e. Paraffin, spermaceti

773. What is the shortest goods distribution channel for medical products?

- a. Four-level
- b. Zero-level**
- c. Three-level
- d. Two-level
- e. One-level

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

775. 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

776. Eucalyptus essential oil is used as an antiseptic. What excretory structures of a leaf accumulate this substance?

- a. Essential oil cavities**
- b. Glandular <<spots>>
- c. Secretory cells
- d. Essential oil glandules
- e. Glandular hairs

777. Considering thermolability of most animal-derived injection preparations, they are sterilized by means of:

- a. In autoclave chamber with high-pressure saturated steam
- b. Addition of buffer solutions
- c. High frequency current
- d. Ultrasound
- e. Filtration through membrane**

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

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

779. What medicinal plant has anti-inflammatory and expectorant properties due to its content of triterpene saponins?

- a. Panax ginseng
- b. Orthosiphon stamineus
- c. Astragalus dasyanthus
- d. Aralia mandshurica
- e. Glycyrrhiza glabra**

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

- a. Bank loan
- b. Term loan

- c. State loan
- d. Prolonged loan

e. Commercial loan

781. 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

782. 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

783. 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

784. A 28-year-old pregnant woman (8-9 weeks) after clinical examination and laboratory analysis was diagnosed with acute pyelonephritis. What empiric antibacterial therapy will be optimal in this case?

- a. Norfloxacin
- b. Tetracycline
- c. Chloramphenicol

d. Amoxicillin

e. Gentamicin

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

- a. Expectorant
- b. Litholytic

c. Detoxicant

- d. Astringent
- e. Cardiotonic

786. 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. 2 copies of F-3 form
- c. 2 copies of F-1 form
- d. F-3 form
- e. F-1 form

787. In Ukraine the auditor position eligibility requires the candidate to be a Ukrainian citizen and have the qualification certificate for work as an auditor within the Ukraine's territory. The certificate is effective for:

- a. 1 years
- b. 3 years

c. 5 years

d. Indefinitely

e. 2 years

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

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

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

- a. Diphenylamine
- b. Cyanogen bromide
- c. Aniline
- d. Pyridine
- e. Ninhydrin

790. What technology was used by a pharmacist to make a starch solution?

- a. Mixed it with hot water and added cold water
- b. Mixed it with cold water, then poured the mixture into boiling water and boiled for 1-2 minutes
- c. Dissolved it in a vial for dispensing in freshly-distilled filtered purified water
- d. Dissolved it in cold water and heated
- e. Dissolved it in boiling water

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

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

792. A pharmaceutical company lacks the manufacturing power to satisfy the demand for certain medicines. The company increased the price of these medicines and stopped advertising them. What type of marketing is it?

- a. Demarketing
- b. Conversion marketing
- c. Stimulation marketing
- d. Remarketing
- e. Synchromarketing

793. 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

794. 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. Violet
- b. Blue
- c. Yellow
- d. Pink
- e. Green

795. 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**

796. Under the current legislation, full or partial exemption of persons and legal entities from tax payment is called:

- a. Tax system
- b. Tax
- c. Tax concession**
- d. Tax rate
- e. Subject to taxation

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

798. 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. Pharmacist
- b. Officer of a local division of the state inspectorate for drug quality control
- c. Employee appointed to this task by the head manager**
- d. Tax officer
- e. Head manager

799. A young mother has come to a pharmacy to buy an antipyretic drug for her 3-month-old infant. What dosage form would you choose for the infant?

- a. Capsules
- b. Tablets
- c. Spray
- d. Lozenges
- e. Suppositories

800. During drug identification, a sample of the substance was moistened with concentrated sulfuric acid and the bottom of the test tube was carefully heated. A white plaque appeared that coated the test tube walls from the inside. What substance can be detected using this reaction?

- a. Sodium benzoate**
- b. Morphine hydrochloride
- c. Benzocaine
- d. Nitrofurural (Nitrofurazone)
- e. Theophylline monohydrate

801. When pressing tablets, puncheons 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

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

- a. -

**b. Manufacturing activity**

- c. Financial activity
- d. Financial and credit activity
- e. Commercial activity

803. What technological method is used to prepare powders with dyes?

- a. Preliminary sifting
- b. Mixing in descending order, from larger to smaller volume
- c. Mixing in ascending order, from smaller to larger volume
- d. The principle of <<three layers>>
- e. The dye is added last, after the mixture is prepared

804. 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. Paracetamol**

- c. Indomethacin
- d. Diclofenac sodium
- e. Nimesulide

805. A pharmaceutical company produces mint tincture. Technological process of making this tincture requires it to be made:

- a. With 70% alcohol in 1:15 proportion
- b. With 48% alcohol in 1:2 proportion
- c. With 70% alcohol in 1:5 proportion
- d. With 70% alcohol in 1:10 proportion
- e. With 90% alcohol in 1:20 proportion**

806. 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. Nitroglycerine**

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

807. To identify vicazol (menadione), an analytical chemist places this substance moistened with hydrochloric acid into a colorless burner flame. The yellow flame coloring that develops as a result indicates the presence of the following cations in the molecule:

a. Potassium

**b. Sodium**

- c. Zinc
- d. Magnesium
- e. Calcium

808. An analytical chemist determines potassium ions admixture in a medicinal substance with sodium tetraphenylborate according to the State Pharmacopoeia of Ukraine. What analytical effect would confirm the presence of this admixture?

- a. Yellow coloring
- b. Blue coloring
- c. Pink coloring
- d. White opalescence**
- e. Brown coloring

809. 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 speed up the process of applying the coating



- c. They are not durable enough
- d. To prevent them from adhesion to each other
- e. To improve their appearance

810. A pharmacist has prepared a Leonurus tincture with sodium bromide. How was sodium bromide introduced into the preparation in this case?

- a. Dry substance was dissolved in the filtered extract in a stand
- b. Sodium bromide was mixed in a separate vessel with a part of the extract, then this mixture was added into the prepared tincture
- c. Sodium bromide was dissolved in the tincture in a vial for dispensing
- d. Dry substance was dissolved in the infusion apparatus
- e. Concentrated solution was added into the prepared extract

811. When making ampoules, certain admixtures are introduced into the glass to change its properties. Why is boron oxide added into the glass?

- a. To change its color
- b. To increase its thermal resistance
- c. To improve its chemical resistance
- d. To lower its melting temperature
- e. To increase its mechanical strength

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

813. For rapid analysis of a dosage form with procaine hydrochloride, an analytical chemist performed necessary chemical reactions. What reaction is a variation of Schiff base formation?

- a. Lignin test
- b. Hydroxamic reaction
- c. Iodoform test
- d. Azo dye formation
- e. <<Silver mirror>> reaction

814. 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

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

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

816. The essential oil of which plant contains zingiberene, which is formed during steam distillation from matricin?

- a. Melissa officinalis
- b. Valeriana officinalis
- c. Inula helenium
- d. Chamomila recutita

e. Arnica montana

817. A certain management style can be characterized by the following features: the authority is highly centralized; work duties of the employees are very structured; the ability of employees to make decisions is extremely limited; strict compliance with numerous rules and regulations is prioritized. Name this management style:

- a. Democratic
- b. Liberal
- c. Collective
- d. Direct
- e. Authoritarian

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

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

819. To prepare eyedrops with antibiotic a dispensing chemist has been using flowing steam sterilization under 100°C for 30 minutes. What antibiotic allows for such sterilization?

- a. Biomycin
- b. Sodium benzylpenicillin
- c. Levomycetin (Chloramphenicol)
- d. Streptomycin sulfate
- e. Erythromycin

820. What substance is most often used as a vehicle in triturations?

- a. Starch
- b. Lactose
- c. Sucrose
- d. Glucose
- e. Talcum

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

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

822. What herbal raw material contains alkaloid glaucine that has a strong antitussive effect?

- a. Vinca minor grass
- b. Glaucium flavum grass
- c. Macleaya grass
- d. Belladonna grass
- e. Chelidonium grass

823. Most types of herbal raw materials are stored dry. However, for juice production the factories receive fresh herbal material. Name one such plant that is processed fresh:

- a. Althaea officinalis
- b. Plantago major
- c. Capsella bursa-pastoris
- d. Rosa canina
- e. Urtica dioica

824. Thymol and carvacrol are the main active substances of Thymus vulgaris. They belong to the

following class of bioactive substances:

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

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

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

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

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

827. 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

828. A factory that manufactures vitamin preparations has received a batch of herbal raw material. It consists of round wrinkled orange-red fruits that taste sweet-sour and slightly tart. The fruits are up to 3 cm long, 1.5 cm in diameter, and are filled with hard small angular yellow nutlets. The nutlets and the inner surface of the fruits are covered with long and extremely coarse bristly down. This herbal raw material can be identified as:

- a. Fructus Hippophaes
- b. Fructus Sorbi
- c. Fructus Ribis nigri
- d. Fructus Rosae
- e. Fructus Viburni

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

830. An analytical quality control laboratory performs analysis of an ascorbic acid substance. What device must be used to determine its specific optical rotation?

- a. Spectrophotometer
- b. Hydrometer
- c. Viscometer
- d. Refractometer
- e. Polarimeter

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

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

- a. Purine
- b. Acridine
- c. Phenothiazine
- d. Indole
- e. Benzimidazole

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

834. The Dobropharma pharmacy manager makes plans for standard stock of various groups of goods, based on their purpose. Convenience goods belong to the following group:

- a. Single delivery
- b. Seasonal accumulation
- c. Current demand
- d. Prior delivery
- e. Specific demand

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

836. What indicator is used in iodometry for quantitative determination of caffeine in caffeine and sodium benzoate?

- a. Bromthymol blue
- b. Eriochrome black
- c. Potassium chromate
- d. Methyl orange
- e. Starch

837. 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. Administrative
- b. Social
- c. Criminal
- d. Legal
- e. Personal

838. 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

839. What parameter is measured using a drum friability tester during tablet quality control?

- a. Abrasion resistance
- b. Impurities
- c. Disintegration
- d. Dissolution
- e. Uniformity of dosage

840. Tosylchloramide sodium (chloramine) has a disinfecting effect due to the release of active chlorine in an acidic medium. What method is used to quantify it?

- a. Nitritometry
- b. Iodochlorometry
- c. Complexonometry
- d. Iodometry
- e. Permanganatometry

841. A manufacturer plans to sell its new medicine directly to the consumers through its own network of pharmacies. What type of distribution channel is it?

- a. Direct distribution channel (zero channel)
- b. Two-level distribution channel
- c. One-level distribution channel
- d. Four-level distribution channel
- e. Three-level distribution channel

842. What drug is used to treat hyperthyroidism?

- a. Mercazolil (Thiamazole)
- b. Prednisolone
- c. Oxytocin
- d. Insulin
- e. Metformin

843. A pharmaceutical factory produces ointments. Name the stage of the manufacturing process that allows to obtain a uniform ointment:

- a. Homogenization
- b. Dispersion
- c. Mixing components with the vehicle
- d. Ointment concentrate production
- e. Vehicle production

844. A certain pharmaceutical company is focused on the manufacture of medicines, while the sales play only a secondary role. What is the company's main type of business activity in this case?

- a. Insurance
- b. Consulting services
- c. Leasing
- d. Finances
- e. Manufacture

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

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

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

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

847. 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

848. A large pharmaceutical company produces a homogeneous selection of medicinal products and sells them on the domestic market. What model of marketing service organization was chosen by this company?

- a. Segment-oriented
- b. Market-oriented
- c. Functional
- d. Product-oriented
- e. Regional

849. 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. Functional

b. Linear

- c. Productive
- d. Adaptive
- e. Matrix

850. The owner of a pharmacy network unilaterally decides to register its trade mark, based on his feeling that he makes the right choice. What type of managerial decision is it?

- a. Rational

b. Intuitive

- c. Adaptive
- d. Collective
- e. Collegial

851. What preparation has an antiemetic effect?

a. Metoclopramide

- b. Clarithromycin
- c. Aluminum phosphate
- d. Loperamide
- e. Sodium bicarbonate

852. A pharmaceutical company produces liquid dosage forms. What principle is used in rotary pulsation apparatus to obtain an emulsion?

- a. Ultrasonic dispersion
- b. Mechanical dispersion
- c. Solubilization
- d. Coacervation
- e. Maceration

853. Concentrated solutions are used to speed up the preparation of mixtures. What volume of a 5% sodium bicarbonate solution (1:20) must be taken to prepare a mixture that contains 6.0 g of the

medicinal substance?

- a. 7.5 mL
- b. 60 mL
- c. 30 mL
- d. 90 mL
- e. 120 mL**

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

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

855. A pharmacist prepares a suspension with a hydrophobic substance. What stabilizer is necessary for this dispersion system?

- a. Methyl cellulose**
- b. Boric acid
- c. Glucose
- d. Nipagin (Methylparaben)
- e. Sodium chloride

856. To treat iron-deficiency anemia the following drug is usually prescribed:

- a. Vicasol (Menadione)
- b. Ferroplex**
- c. Furagin (Furazidinum)
- d. Heparin
- e. Corticosteroids

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

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

858. What property of the tablet mass determines the most how fast a matrix hole of the tablet press machine is filled?

- a. Humidity
- b. Fluidity (flowability)
- c. Bulk density
- d. Porosity
- e. Relative density**

859. A pharmacist prepares a compound powder. What medicinal substance must be comminuted without adding an adjuvant liquid (alcohol or ether)?

- a. Camphor
- b. Thymol
- c. Streptocide (Sulfanilamide)
- d. Zinc oxide**
- e. Menthol

860. 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

861. Ampoule workshop of a factory produces 5% oil solution of tocopherol acetate for injections. What method of filling the ampoules is optimal in this case?

- a. Syringe
- b. Vacuum
- c. Syringe and devaporation
- d. Syringe and vacuum
- e. Devaporation

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

- a. Magnesium oxide
- b. Dimedrol (Diphenhydramine)
- c. Streptocide (Sulfanilamide)
- d. Glucose

e. Ethacridine lactate

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

864. Clonidine hydrochloride is a salt of an organic base. What method is used for the quantification of this medicinal substance?

- a. Nitritometry
- b. Alkalimetry
- c. Bromatometry
- d. Iodometry
- e. Complexonometry

865. 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. Antispasmodics
- b. Antitussive drugs

c. Probiotics

- d. Mucolytic agents
- e. Expectorants

866. What medicine is used for the symptomatic treatment of meteorism?

- a. Almagel (Algeldrate + magnesium hydroxide)
- b. Papaverine
- c. Platyphyllin

d. Simethicone

- e. Drotaverine

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

- a.  $H_2SO_4$
- b. NaCl
- c.  $CoCl_2$
- d.  $CuSO_4$
- e.  $AgNO_3$

868. 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

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

- a. Ammonia spirit-anise spirit drops
- b. 1% citral alcohol solution
- c. Leonurus tincture

d. 30% hydrogen peroxide (Perhydrol)

- e. Elixir pectoralis

870. 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

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

- a. Ointments
- b. Suspensions
- c. Infusion solutions
- d. Emulsions
- e. Infusions and decoctions

872. When examining a substance with an ester group, you can conduct a reaction that produces:

- a. Azo dye
- b. Berlin blue
- c. Diazonium salt

d. Iron(III) hydroxamate

- e. Indophenol

873. To reduce business risks, a pharmaceutical company expands its business by entering new areas and industries that are unrelated to the drug manufacturing. Name this process.

a. Diversification

- b. Modernization
- c. Intensification
- d. Integration
- e. Conglomeration

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

e. Manufacturing costs

875. A patient with chronic heart failure, who has been taking cardiac glycosides, developed signs of glycoside intoxication. What antidote would be advisable in this case?

- a. Methionine

b. Unithiol (DMPS)

- c. Protamine
- d. Naloxone
- e. Vicasol (Menadione)

876. Hypericum perforatum grass contains hypericin. What is the pharmacological effect of this

substance?

- a. Antiasthmatic
- b. Antidepressant**
- c. Expectorant
- d. Anticonvulsant
- e. Analgesic

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

- a. Pumpkin seeds
- b. Fennel fruits
- c. Schisandra seeds**
- d. Flax seeds
- e. Silybum fruits

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

- a. Diazonium salts
- b. Fluorescein
- c. Iodoform
- d. Azo dye
- e. Murexide

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

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

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

881. What medicinal substance during interaction with a silver nitrate solution forms a white precipitate that quickly colors yellowish and then turns black?

- a. Hydrogen peroxide
- b. Sodium thiosulfate
- c. Sodium bromide
- d. Sodium iodide
- e. Sodium chloride

882. 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

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

884. A pharmacy prepares 10% sodium chloride injection solution. What sterilization would be optimal in this case?

- a. Autoclave chamber with high-pressure saturated steam
- b. Irradiation sterilization
- c. Sterile filtration through membrane
- d. Gas sterilization
- e. Dry-heat sterilization

885. Mandatory payroll deductions are withheld from the salary of pharmacy workers. Specify the tax rate on income of natural persons:

- a. 20%
- b. 18%
- c. 5%
- d. 0%
- e. 15%

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

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

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

888. Nitroxoline with sodium hydroxide solution produces:

- a. Orange-red coloration
- b. Yellow precipitate
- c. White precipitate
- d. Green-black coloration
- e. Violet coloration

889. 50 ml of injection solution has been made in a pharmacy. Specify the process of solution sterilization:

- a. 140°C - 12 minutes
- b. 120°C - 8 minutes
- c. 110°C - 15 minutes
- d. 160°C - 15 minutes
- e. 180°C - 30 minutes

890. When preparing a solution, the pharmacist used an additional technique - grinding in a mortar with water. What substance typically requires this technique?

- a. Boric acid
- b. Silver nitrate
- c. Copper sulfate

- d. Calcium gluconate
- e. Furacilin (Nitrofurantoin)

891. A woman suddenly developed an angina pectoris attack. To arrest the attack, she took a medicine that caused her a severe headache, facial hyperemia, and tachycardia. Such side effects are characteristic of the following group of drugs:

- a. Beta-adrenergic antagonists
- b. Nitrates**
- c. Antispasmodics
- d. Calcium channel blockers
- e. Alpha-adrenergic agonists

892. Pharmacy premises can be divided into service rooms and workrooms. Name the workroom for storage of medical products:

- a. Material storage room**
- b. Distillation room
- c. Shop floor
- d. Washing room
- e. Aseptic block

893. In production of extraction drugs with maximum purity level, the extracts are purified using the method of liquid-liquid extraction, which is the process of:

- a. Dialysis
- b. Extraction from one liquid using another**
- c. Ultrasound exposure
- d. Electrolyte action
- e. Heating the extract

894. There are various groups of adjuvants used in tablet production. What is the function of excipients?

- a. To make pills of a certain weight**
- b. To create necessary adhesive force between particles
- c. To improve the taste
- d. To improve the flowability of granular material
- e. To improve disintegration

895. Batches of several fatty oils were sent to the analytical quality control laboratory. One of the criteria for the study of fatty oils is determining their solubility. What oil is well soluble in ethyl alcohol?

- a. Castor oil
- b. Sunflower oil
- c. Flaxseed oil
- d. Olive oil
- e. Cocoa butter

896. The following herbal raw material is a source of tannin in pharmaceutical manufacture:

- a. Folium Cotini coggygriae**
- b. Rhizomata Bergeniae
- c. Rhizomata et radix Sanguisorbae
- d. Fructus Viburni
- e. Rhizomata Bistortae

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

- a. Argentometry
- b. Permanganatometry
- c. Mercurimetry
- d. Complexonometry
- e. Bromatometry**

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

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

899. According to the State Pharmacopoeia of Ukraine, an analytical chemist determines quantitative content of potassium acetate by means of acidimetry in non-aqueous medium. Name the volumetric solution in this case:

- a. Iodine
- b. Sodium nitrite
- c. Perchloric acid**
- d. Sodium hydroxide
- e. Potassium bromate

900. 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

901. What topical antiviral agent should be recommended to the patient with herpetic lesions on the lips?

- a. Aflubin
- b. Amizon (Enisamium iodide)
- c. Arbidol (Umifenovir)
- d. Anaferon
- e. Acyclovir

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

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

903. The substances and their salts that are used in production and purification of narcotic and psychotropic substances should be accounted in the pharmacy as:

- a. Narcotic substances
- b. Toxic substances
- c. Precursors**
- d. Psychotropic substances
- e. Potent substances

904. Microscopy of transverse section of a bark sample shows a wide dark red cork layer, lamellar collenchyma, druses, bast fibers with a crystal sheath, and medullary rays. What herbal raw material is it?

- a. Birch bark
- b. Buckthorn bark
- c. Oak bark
- d. Willow bark
- e. Ash bark

905. Information on the pharmacy's actual stock of narcotic drugs, psychotropic substances, and precursors must be checked against the balance records made in the relevant logbook. How often must it be done?

- a. -
- b. Quarterly
- c. Annually
- d. Monthly
- e. Daily

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

907. During storage, suspension instability manifests itself as:

- a. Sedimentation of particles
- b. Flocculation of particles
- c. Change of particles shape
- d. Dissolution of particles
- e. Caking of particles

908. Vinblastine and Vincristine demonstrate antitumor activity. Name the herbal raw material used in production of these medicines:

- a. Herba Selaginis
- b. Rhizomata Nupharis lutei
- c. Folia Catharanthi rosei
- d. Folia Berberidis
- e. Herba Vincae minoris

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

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

910. Achillea grass is harvested during a certain stage of plant growth. Name this stage:

- a. During the budding
- b. Before the flowering
- c. During the fruiting
- d. During the shoot growth
- e. During mass flowering

911. Oblong tablets are called:

- a. Capsules
- b. Caplets
- c. Pellets
- d. Dragee
- e. Forte tablets

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

- a. One month, not counting the current one
- b. The receipt form is not kept by the pharmacy
- c. One year, not counting the current one
- d. Five years, not counting the current one
- e. Three years, not counting the current one

913. What is the driving force of the diffusion process during the extraction of a herbal raw material?

- a. Brownian motion of the particles
- b. High temperature of the extractant
- c. High polarity of the extractant
- d. Different concentration of the active substance in the raw material and extractant**
- e. Presence of a film membrane

914. A pharmacy customer complains of constricting retrosternal pain that irradiates into the left arm; he fears that he may die. The pain appeared suddenly after physical exertion. Name the first aid medicine in this case:

- a. Panangin
- b. Nitroglycerine**
- c. Naphthyzin (Naphazoline)
- d. Riboxin (Inosine)
- e. Metacycline

915. 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

916. "Novo-Passit" preparation is used as a sedative. It is manufactured from the following herbal raw material:

- a. Taraxacum roots
- b. Populus nigra buds
- c. Passiflora grass**
- d. Acorus calamus rhizomes
- e. Viburnum bark

917. 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. Confiscation
- c. Elimination
- d. Conducting an official investigation
- e. Recording as received

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

919. Direct argentometric titration using the Mohr method can be used for quantification of sulfathiazole (norsulfazole). What indicator is used in such analysis?

- a. Methylene blue
- b. Starch
- c. Tropeolin 00
- d. Potassium chromate**
- e. Bromophenol blue

920. Name the type of suppositories that are made from aqueous suspensions and undergo deep freezing.

- a. Multi-layered

- b. Hollow
- c. Dyed
- d. Porous

e. Lyophilized

921. In the process of pharmaceutical company entering an offshore market the traditions and customs, religion, system of values, and education level of the local population were analyzed. What factors of international marketing environment were researched?

- a. Political
- b. Sociocultural
- c. Legal
- d. Technological
- e. Economical

922. A pharmacy has received from its supplier a shipment of drugs that are included into the National Essential Drugs List. What is the pricing policy regarding these drugs?

a. Controlled price

- b. Fixed price
- c. Indicative price
- d. Free-of-control price
- e. Contract price

923. During macroscopic analysis of rhizomes with roots, a pharmacist notes that rhizomes often have a cavity in their center. The color of the raw material is reddish-brown on the outside, while on section reddish-brown bark and orange-red wood are visible. The taste is sweet at first, but becomes slightly astringent and bitter later. What plant is the source of this herbal raw material?

a. *Rubia tinctorum*

- b. *Melissa officinalis*
- c. *Mentha piperita*
- d. *Thymus serpyllum*
- e. *Sambucus nigra*

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

- a. Inspectorate for medicine quality control
- b. Regional state administration
- c. The Ministry of Health

d. Pharmacy

e. Local council

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

- a. Alkaloids
- b. Polysaccharides
- c. Flavonoids

d. Tannins

e. Iridoids

926. 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. No isotonation is needed

- b. Boric acid
- c. Sodium sulfate
- d. Sodium chloride
- e. Sodium nitrate

927. Commercial and financial activity of the pharmacies can be measured using a system of parameters. What parameter can be described as the sum of sold goods per employee (taking the average number of employees during the analyzed period)?



- a. Turnover
- b. Stock of goods
- c. Profitability
- d. Labor productivity**
- e. Price index

928. When selling iron preparations that are to be taken orally, a dispensing chemist should warn the patients that these drugs cannot be taken with milk or dairy products, because it leads to:

- a. Prolonged action of iron preparations
- b. Accelerated absorption of iron preparations
- c. Formation of chelate complexes that cannot be assimilated into the body**
- d. Increased activity of iron preparations
- e. Accelerated clearance of iron preparations

929. Powder moisture content affects its:

- a. Homogeneity
- b. Solubility
- c. Particle shape
- d. Flowability**
- e. Particle size

930. 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**

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

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

932. What minimum amount of a toxic substance can be weighed on one-gram hand scales?

- a. 0.05 g
- b. 0.04 g
- c. 0.02 g
- d. 0.03 g
- e. 0.1 g

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

934. 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. Essential oils
- b. Coumarins
- c. Anthracene derivatives
- d. Tannins**

e. Flavonoids

935. According to the rules in force, workrooms should regularly undergo humid disinfection. How often should the floors be washed?

- a. No less than twice in a month
- b. No less than once in a week
- c. No less than twice in a week
- d. No less than once in a shift**
- e. No less than thrice in a week

936. A drug quality control laboratory performs certification of antibiotics. What antibiotic has alpha-amino acid residue that can be determined using the ninhydrin reaction?

- a. Lincomycin
- b. Ampicillin**
- c. Oxacillin
- d. Chloramphenicol
- e. Cefazolin

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

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

938. Codeine is used as a cough-depressant. What herbal raw material contains this alkaloid?

- a. Grass of plume poppy
- b. Tea leaves
- c. Celandine grass
- d. Pods of opium poppy**
- e. Grass of common periwinkle

939. 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. Phenothiazine
- b. Pyridine
- c. Quinoline
- d. beta-lactam
- e. Furan

940. A patient with severe progression of bronchial asthma has been taking an inhalation corticosteroid for a long time to relieve asphyxia attacks. What side effect is the most likely to develop in this case?

- a. Osteoporosis
- b. Oral candidiasis**
- c. Osteoarthritis
- d. Steroid diabetes
- e. Cushing's syndrome

941. To improve iodine solubility in the purified water, iodine must be:

- a. Comminuted with alcohol
- b. Dissolved in the saturated solution of potassium iodide**
- c. Dispersed with glycerine
- d. Dissolved in the boiling water
- e. Reduced to fine powder

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

- a. Tanacetum vulgare

b. *Crataegus sanguinea*

c. *Foeniculum vulgare*

d. *Betula pendula*

e. *Calendula officinalis*

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

a. Ammonium oxalate

b. Magnesium sulfate

c. Sodium hydroxide

d. Sodium cobaltinitrite

e. Barium chloride

944. 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. Neurotoxic

b. Chondrotoxic

c. Hepatotoxic

d. Hematotoxic

e. Nephrotoxic

945. 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*

946. A 25-year-old man is diagnosed with acute pyelonephritis of moderate severity. What drugs should be prescribed for etiologic therapy?

a. Anticholinesterase drugs

b. Antiarrhythmic drugs

c. Glucocorticoids

d. Antimicrobial agents

e. Nonsteroidal antiinflammatory drugs

947. Capsaicin is the main active substance of *Capsicum annuum*. It belongs to the following class of bioactive substances:

a. Anthracene derivatives

b. Iridoids

c. Alkaloids

d. Flavonoids

e. Phenolic compounds

948. 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. Tax Inspectorate

b. Pharmacy management

c. Local authorities

d. -

e. Chief physician

949. Alkaloids are used in medical practice for treatment of various diseases. Based on its chemical composition, the following substance can be classified as a quinolizidine alkaloid:

a. Quinine sulfate

b. Caffeine monohydrate

c. Pachycarpine hydroiodide

d. Scopolamine hydrobromide

e. Codeine phosphate

950. Profitability is an economic parameter that characterizes the effectiveness of the pharmacy's commercial, financial, and manufacturing activity. What parameters are used to determine the profitability of sales?

- a. Cost price of products liquidity
- b. Turnover of goods cost price of products
- c. Turnover of goods wages
- d. Profit turnover of goods**
- e. Liquidity solvency

951. A pharmacy sells various medicines. What medicine is a subject to strict accounting in a special inventory log?

- a. Hydrocortisone acetate
- b. Gentamicin sulfate
- c. Retabolil (Nandrolone)
- d. Microfollin (Ethinylestradiol), tablets
- e. Tramadol, tablets**

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

- a. Suspensions
- b. Infusions
- c. Ophthalmic dosage forms
- d. Dosage forms for newborns**
- e. Emulsions

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

- a. Sale of drugs to chronically ill patients
- b. Sale of extemporal dosage forms
- c. Sale of over-the-counter drugs
- d. Sale of ready-to-use drugs
- e. Sale to other organizations for commercial use**

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

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

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

956. Companies draw up their balance sheets to obtain information about the availability and composition of their property. What section of the balance sheet includes accounts receivable for goods?

- a. Equity capital
- b. Assets**
- c. Long-term liabilities
- d. Non-current assets

e. Current liabilities

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

- a. Camphor
- b. Sulfur
- c. Protargol
- d. Streptocide (Sulfanilamide)

**e. Ethacridine lactate**

958. What substances are used as leaveners in <<effervescent>> tablets?

- a. Aerosil (fumed silica), polysorbate 80
- b. Mixtures of sodium bicarbonate with tartaric or citric acid
- c. Sodium bicarbonate, agar agar
- d. Agar agar, alginic acid
- e. Starch, alginic acid

959. Galenical preparations include:

- a. Tinctures**
- b. Spansules
- c. Capsules
- d. Aerosols
- e. Granules

960. 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. Antispasmodics**
- c. Antibiotics
- d. Cholagogues
- e. Hepatoprotectors

961. A dispensing chemist uses iodometry (back titration) for quantitative determination of caffeine medicinal substance. What indicator is used in this case?

- a. Phenol red
- b. Phenolphthalein
- c. Eriochrome black
- d. Starch**
- e. Litmus paper

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

- a. Silicone bases
- b. Hydrophobic bases**
- c. Diphylic (amphiphilic) emulsion bases
- d. Adsorption bases
- e. Hydrophilic bases

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

964. A 6-year-old child developed pneumonia and was prescribed an antibiotic for its treatment. After the treatment the child's hearing deteriorated. What drug could have caused this complication?

- a. Azithromycin
- b. Gentamicin**

- c. Ceftriaxone
- d. Penicillin
- e. Ampicillin

965. Because of a power outage, the cash register in a pharmacy has stopped working. What should be used to perform transactions, while the cash register remains inoperable?

- a. Cash deposit and cash withdrawal receipts
- b. Invoices
- c. Payment orders
- d. Payroll records
- e. Transactions log book**

966. Pharmaceutical corporations pay great attention to the formation of a certain set of values, traditions, and behavioral norms for all their employees. What is formed as a result of this type of corporate organizational work?

- a. Organization profitability
- b. Business expansion
- c. Staff leasing
- d. Organization culture**
- e. Product diversification

967. What medicine is used for anesthesia and cannot be prescribed to outpatients, according to Decree №360?

- a. Anaesthesin (Benzocaine)
- b. Midecamycin
- c. Metoprolol
- d. Sodium thiopental**
- e. Suprastin (Chloropyramine)

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

- a. Formulation of the mission
- b. Strategy evaluation**
- c. Evaluation and analysis of the external environment
- d. Choosing a strategy
- e. Implementation of the strategic plan

969. When pressed, tablets stick to the tablet press. Why such adhesion occurs?

- a. Excessive moisture of the tablet substance and high pressure**
- b. Lamellar crystals in the tablet powder
- c. Heterogeneity of the granulated material
- d. Inadequate flowability of the tablet substance
- e. High specific density of the powders

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

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

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

972. Sanguisorba officinalis herbal raw material contains tannins. What method must be used to determine their content according to the State Pharmacopoeia of Ukraine?

- a. Nephelometry
- b. Spectrophotometry
- c. Chromatography
- d. Permanganatometry**
- e. Photoelectrocolorimetry

973. Medicinal substance had been received for chemical analysis. Biuret test was performed for identification. Name this substance:

- a. Iodoform
- b. Diphenhydramine
- c. Dipyrone (Metamizole)
- d. Benzoic acid
- e. Bromisoval**

974. A pharmacist prepares suppositories by pouring. Name the coefficient for substitution of fatty vehicle with glycerinated gelatin vehicle:

- a. 1.20
- b. 1.11
- c. 1.25
- d. 1.31
- e. 1.21**

975. Polyethylene oxide base belongs to the following group:

- a. Hydrophobic
- b. Emulsion
- c. Fat
- d. Amphiphilic
- e. Hydrophilic**

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

977. A pharmaceutical factory produces tablets of sodium chloride. What is the method of their production?

- a. Direct compression with the addition of excipients
- b. Direct compression without additional substances**
- c. Wet granulation prior to compression
- d. Moulding
- e. Dry granulation prior to compression

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

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

979. The ampoule workshop of a factory produces a 5% oil-based solution of tocopherol acetate for injections. What filling technique should be used to fill the ampoules with this solution?

- a. Vapor condensation
- b. Syringe**

- c. Syringe and vapor condensation
- d. Syringe and vacuum
- e. Vacuum

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

- a. Centaurea cyanus flowers
- b. Centaurium grass**
- c. Vaccinium vitis-idaea leaves
- d. Birch leaves
- e. Equisetum arvense grass

981. An analytical pharmacist performs the express analysis of anti-inflammatory eye drops containing potassium iodide. What method is used for quantification of the active substance?

- a. Acidimetry
- b. Complexonometry
- c. Nitritometry
- d. Argentometry**
- e. Alkalimetry

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

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

984. How long should a retail business that deals in medicines keep the quality certificates issued by drug manufacturers?

- a. 5 years
- b. 3 years
- c. 2 years
- d. 6 months
- e. 1 year

985. A pharmaceutical company produces a medicine under the brand name "Corglyconum". What herbal raw material is used in preparation of this drug?

- a. Lily-of-the-valley grass**
- b. Buckthorn bark
- c. Wormwood grass
- d. Dandelion roots
- e. Plantain foliage

986. At the end of each month a pharmacy accountant draws up a balance. What indicator characterizes liabilities of a pharmaceutical company?

- a. Accounts receivable
- b. Circulating assets
- c. Reserves and expenses



d. Equity capital

e. Work-in-process inventory

987. What hypotensive drug is an agent of choice for the patients suffering from arterial hypertension with concomitant type I diabetes mellitus?

a. Hydrochlorothiazide

b. Carvedilol

c. Lisinopril

d. Atenolol

e. Labetalol

988. 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. Cardiac glycosides

c. Fatty oils

d. Thioglycosides

e. Steroidal saponins

989. A dispensing chemist-technologist has accepted a prescription for eye drops with adrenaline hydrochloride. What characteristic of adrenaline hydrochloride must be taken into account, when preparing the eye drops?

a. Volatility

b. Thermolability

c. Thermal stability

d. Low solubility in water

e. Poor solubility in water

990. 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

991. 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. Cromoglicic acid preparations

b. Xylometazoline preparations

c. Beclomethasone preparations

d. Salt solutions based on iso- and hypotonic sodium chloride solutions

e. Essential oil-based preparations

992. A patient was diagnosed with peptic ulcer disease of the stomach and prescribed a combined pharmacotherapy. Several days later, his feces turned black. What medicine is likely to cause this phenomenon?

a. Omeprazole

b. Famotidine

c. Lansoprazole

d. Bismuth subcitrate

e. Ranitidine

993. A pharmaceutical company produces galenic preparations. These preparations contain:

a. Taste-correcting agents

b. Only one active substance

c. Preservatives

d. A sum of active substances

e. Smell-correcting agents

994. What economic parameter characterizes the effectiveness of the pharmacy's commercial, financial, and manufacturing activity?

- a. Stock of goods
- b. Profitability**
- c. Circulation of goods
- d. Work productivity
- e. Inventory turnover

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

996. A tincture of Fructus Capsici is used as a distracting agent and an irritant in cases of neuralgia, radiculitis, and myositis. What bioactive substance of Fructus Capsici has such an effect?

- a. Schisandrin
- b. Capsaicin**
- c. Ephedrine
- d. Inulin
- e. Colchicine

997. A certain herbal raw material is used to make Flamin cholagogue. Name this material:

- a. Helichrysi arenarii flores**
- b. Crataegi flores
- c. Tanacetii flores
- d. Meliloti herba
- e. Viola herba

998. A pharmacy owner starts a business in the retail sale of medicines. What document allows the pharmacy owner to trade for cash in his pharmacy?

- a. -
- b. Trade patent**
- c. State registration certificate
- d. License for production of medicines
- e. Quality certificate

999. What is the name of the ability to restore the properties of a heterogeneous system by perturbation?

- a. Granulation
- b. Emulsification
- c. Resuspension**
- d. Dispersion
- e. Extraction

1000. What medicinal substance has benzimidazole in its structure?

- a. Dibazol (Bendazol)**
- b. Mercazolil (Thiamazole)
- c. Metamizole sodium salt (Analgin)
- d. Diphenhydramine hydrochloride (Dimedrol)
- e. Nitrofuril (Furacilin)

1001. 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. Apricot**

- c. Acacia
- d. Cherry
- e. Plum

1002. 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

1003. A dispensing chemist-analyst identifies phenol, using a phenolic hydroxyl reaction. What reagent is necessary for this reaction?

- a. Sulfuric acid
- b. Sodium sulfate
- c. Potassium chloride
- d. Iron(III) chloride
- e. Calcium chloride

1004. What medicinal substance is a derivative of morphinan?

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

1005. Strategic planning of pharmaceutical companies consists of several consecutive stages. What stage is the final one?

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

1006. 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. Angle of rotation
- c. Viscosity
- d. Optical density
- e. Refractive index

1007. The medicines that contain anthracene derivatives are used as laxatives. What medicinal plant contains this group of bioactive substances?

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

1008. A 67-year-old man with chronic heart failure takes digoxin. To reduce the side effects of digoxin, his doctor recommended him to combine this drug with:

- a. Calcium chloride
- b. Euphyllin (Aminophylline)
- c. Potassium aspartate and magnesium aspartate
- d. Calcium gluconate

e. Hydrochlorothiazide

1009. 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. Behavioral
- b. Demographic
- c. Social and economic
- d. Geographical
- e. Psychographic

1010. 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. Purine derivatives
- b. Isoquinoline derivatives
- c. Quinuclidine derivatives
- d. Indole derivatives
- e. Tropane derivatives**

1011. Microscopy of herbal raw material reveals the following diagnostic characters in the microslide: pseudostratified cork, large parenchyma cells, filled with inulin, clearly visible cambium layer, large vessels, schizogenous cavities with essential oil. These features confirm the authenticity of the following herbal raw material:

- a. Rhizomata et radices Inulae
- b. Radices Taraxaci
- c. Rhizomata et radices Rubiae
- d. Radices Ononidis
- e. Radices Althaeae

1012. What stabilizer is used to stabilize ascorbic acid solutions for injections?

- a. Sodium thiosulfate
- b. Sodium bicarbonate with sodium sulfite**
- c. 0.1 M hydrochloric acid solution
- d. Weibel stabilizer
- e. 0.1 M sodium hydroxide solution

1013. The quantification of acetylsalicylic acid using the method of direct alkalimetry is recommended to be carried out at the temperature no higher than 20°C to prevent a certain process from occurring. What process is it?

- a. Reduction of the medicinal substance
- b. Hydrolysis of the ester group**
- c. Oxidation of the medicinal substance
- d. Precipitation of the formed salt
- e. Decarboxylation of the medicinal substance

1014. What stabilizer must the pharmacist add, when preparing an atropine sulfate solution for injections?

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

1015. What medicine obtained from ergot is used in gynecology and has a hemostatic effect?

- a. Vincaton
- b. Digitoxin
- c. Vinblastine
- d. Galantamine hydrobromide

**e. Ergotamine hydrotartrate**

1016. A certain drug explodes when heated to  $180^{\circ}\text{C}$  or upon impact and, therefore, must be handled carefully during receipt and storage. This drug is:

- a. Alcoholic iodine solution
- b. Barium chloride

**c. Nitroglycerine solution**

- d. Calcium chloride
- e. Activated carbon

1017. A manufacturing company initiates changes to the package insert of a drug, which are aimed at limitation of its use. What type of marketing is used by the company in this case?

- a. Stimulating
- b. Counteractive**
- c. Remarketing
- d. Synchromarketing
- e. Conversion

1018. *Rhamnus cathartica* fruits contain anthracene derivatives. What qualitative reaction is used to determine the presence of these substances in a herbal raw material?

- a. Reaction with Fehling reagent
- b. Reaction with ammonium iron(III) sulfate

**c. Reaction with an alkali**

- d. Reaction with Molisch reagent
- e. Reaction with iron(II) sulfate

1019. A pharmaceutical manufacturer sets the price for a drug basing on its prime cost with premium. What model of pricing is it?

**a. Cost-based**

- b. Supply-based
- c. Competitive
- d. Demand-based
- e. Breakeven

1020. Which one of the listed solutions for injections must be stabilized with a 0.1 mol-eqL solution of hydrochloric acid?

- a. Ascorbic acid
- b. Sodium bicarbonate
- c. Caffeine and sodium benzoate
- d. Sodium thiosulfate

**e. Novocaine (Procaine)**

1021. 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. Atropine
- b. Papaverine
- c. Lipids

**d. Flavonoids**

- e. Cytisine

1022. A pharmaceutical factory produces various types of tablets. What is the purpose of Solublettae tablets?

- a. Rectal administration
- b. Implantation
- c. Sublingual administration
- d. Preparation of solutions for various pharmaceutical purposes**
- e. Preparation of solutions for injections

1023. According to the State Pharmacopoeia of Ukraine, an analytical chemist should use acidimetry in non-aqueous medium to determine quantitative content of the following purine alkaloid:

- a. Theobromine
- b. Theophylline ethylenediamine
- c. Caffeine**
- d. Caffeine and sodium benzoate
- e. Theophylline

1024. A dispensing chemist was hired to work a night shift at a pharmacy. What time is considered to be a night time according to the Ukrainian legislation currently in force?

- a. From 22:00 to 6:00**
- b. From 22:00 to 10:00
- c. From 22:00 to 7:00
- d. From 21:00 to 6:00
- e. From 00:00 to 8:00

1025. What type of tax is the Individual Income Tax?

- a. Nationwide, indirect
- b. Nationwide, direct**
- c. Local, direct
- d. Local, indirect
- e. Special

1026. The head manager of a pharmacy has determined the salary of a dispensing chemist for the work performed according to the labor norms. What type of payment is it?

- a. Reimbursement
- b. Pension benefit
- c. Additional salary
- d. Base salary**
- e. Incentive pay

1027. 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

1028. A pharmacy warehouse has received a shipment of drugs. During quality control by an authorized person, there were some drugs of questionable quality detected. What measures should be taken by the authorized person in this case?

- a. Draw up a Quality Assessment Report with the defects listed and allow sale of the drug shipment
- b. Return the shipment to the manufacturer
- c. Samples of questionable drugs should be sent to the local inspectorate department; the rest of the drug shipment should be quarantined with marking "Do not sell until further notice"**
- d. Dispose of the shipment that contains questionable drugs
- e. Allow sale of the drug shipment

1029. *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

1030. A pharmaceutical factory produces juices from fresh herbal raw materials. What technological operation is performed at the stage of juice purification?

- a. Filtration
- b. Sedimentation
- c. Heating followed by rapid cooling
- d. Adsorption
- e. Crystallization

1031. To stabilize the suspension a pharmacist has used potassium soap. What substance does this suspension contain?

- a. Sulfur
- b. Camphor
- c. Menthol
- d. Basic bismuth nitrate
- e. Phenyl salicylate

1032. A 36-year-old patient developed acute pyelonephritis. What antibacterial agents has a nephrotoxic effect?

- a. Ampicillin
- b. Erythromycin
- c. Gentamicin
- d. Tetracycline
- e. Penicillin

1033. Spectrophotometric analysis of anthracene derivatives contained in buckthorn bark is based on the following reaction:

- a. Sublimation
- b. Oxidation of anthracene derivatives
- c. Anthraquinone reduction
- d. Production of phenolates with alkali-ammonia solution
- e. Salt precipitation

1034. 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

1035. 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

1036. 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

1037. What substance can be synthesized as a result of the condensation of 5-nitrofurfural with semicarbazide?

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

e. Norfloxacin

1038. Complex drug product Urolesan is a litholytic, antispasmodic, and diuretic agent. It contains ethanolic extract of:

- a. -
- b. *Matricaria chamomilla*
- c. *Thymus serpyllum*
- d. *Rhododendron tomentosum*
- e. *Origanum vulgare*

1039. Hierarchic structure of the Agapetus pharmacy management foresees that authority is being passed on directly from the pharmacy manager to the employees. Specify this type of authority:

- a. Matrix
- b. Divisional
- c. Line
- d. Line and staff
- e. Functional

1040. Specify the drugs recommended for prevention and correction of dysbiotic problems caused by antibiotic therapy:

- a. Antacids
- b. Uroseptics
- c. Cholagogues
- d. Probiotics
- e. Prokinetics

1041. How often should a pharmacy make an inventory of its fixed assets?

- a. Once a year
- b. At least thrice a year
- c. Once every three years
- d. At least once in a quarter
- e. At least twice a year

1042. 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. Bonus
- b. Financial aid
- c. Basic pay
- d. Increment
- e. One-off payment

1043. Lately the Phytopharm pharmaceutical company has been forced to decrease its production volume and range of goods. Not only does the company head manager demonstrate no managerial abilities, but he also appears to be completely disinterested in the running of the business and executes no control over it. Determine the leadership type of the head manager in this case:

- a. Democratic
- b. Directive
- c. Liberal
- d. Autocratic
- e. Authoritarian

1044. What medicinal agents must be manufactured in aseptic conditions followed by thermal sterilization with high-pressure saturated steam?

- a. Concentrated solutions for burette systems
- b. Injection solutions with thermolabile substances
- c. 2% collargol solution for infants
- d. Liquid ingestible antibiotics
- e. Injection solutions with thermostable substances