

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

a. Betamethasone dipropionate

b. Cortisone acetate

c. Prednisone

d. Prednisolone

e. Hydrocortisone acetate

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

a. Recommendation to always read the instructions for the medicines

b. General warnings about the usage of medicines and medical products

c. Claims that the effect of the medicines is guaranteed

d. Full pharmacological name of the medicine and the name of its manufacturer

e. Objective information about the medicines, presented in such a way that the advertising nature of the message is obvious to the consumers

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

a. Sodium edetate

b. Potassium bromate

c. Sodium hydroxide

d. Hydrochloric acid

e. Potassium permanganate

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

a. Brick-red

b. Violet

c. Yellow

d. Green

e. Red

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

a. OROS tablet

b. Tubatine

c. Spansule

d. Microcapsule

e. Pearl

6. 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. Pyrogenic substances

b. Redox substances

c. Chlorides

d. Moisture

e. Sulfates

7. 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. Erysimum canescens

b. Strophanthus kombe

c. Adonis vernalis

d. Digitalis lanata

e. Convallaria majalis

8. 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. Spironolactone

d. Omeprazole

e. Metamizole sodium

9. 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. Chelidonium majus

**b. Macleaya cordata**

c. Vinca minor

d. Glaucium flavum

e. Passiflora incarnata

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

a. Polyvinyl alcohol

**b. Boric acid**

c. Sodium chloride

d. Methyl cellulose

e. Hydrochloric acid

11. 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. Manufacture**

b. Finances

c. Leasing

d. Consulting services

e. Insurance

12. 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. Productivity

b. Effectiveness

c. Efficiency

**d. Survival**

e. Practical implementation of management decisions

13. 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. Metformin

b. Exenatide

c. Arphasetin

d. Glibenclamid

**e. Insulin**

14. 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. Inula helenium

b. Sanguisorba officinalis

c. Zingiber officinale

d. Althaea officinalis

**e. Taraxacum officinalis**

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

a. Dispersing agent for powders

b. Emulsifier

c. Vehicle

d. Preservative

**e. Densifier**

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

- a. Indophenol
- b. Murexide
- c. Fluorescein

**d. Azo dye**

- e. Iodoform

17. 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. Willow bark
- b. Birch bark

**c. Buckthorn bark**

- d. Ash bark
- e. Oak bark

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

- a. Calcium chloride
- b. Hexamethylenetetramine

**c. Sodium bicarbonate**

- d. Sodium chloride
- e. Euphyllin (Aminophylline)

19. 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. Unithiol (DMPS)**

- b. Protamine
- c. Naloxone
- d. Methionine
- e. Vicasol (Menadione)

20. 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. Cholagogues
- b. Antibiotics
- c. Antacids
- d. Hepatoprotectors

**e. Antispasmodics**

21. 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. Administrative
- b. Technological

**c. Economic**

- d. Social and psychological
- e. Social and political

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

- a. Only the tips of the inflorescences are cut

**b. The grass is cut with a knife or sickle at a distance of 20-30 cm from the ground**

- c. The leaves are plucked with the stem
- d. The whole plant is dug up
- e. The whole plant with a root is pulled out from the soil

23. What medicinal agents must be manufactured in aseptic conditions followed by thermal sterilization with high-pressure saturated steam?

- a. Injection solutions with thermolabile substances
- b. Liquid ingestible antibiotics

**c. Injection solutions with thermostable substances**

- d. Concentrated solutions for burette systems
- e. 2% collargol solution for infants

24. 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. Alkaloids
- b. Polysaccharides
- c. Cardiac glycosides

d. Essential oils

- e. Flavonoids

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

- a. Papaverine hydrochloride
- b. Sulfanilamide
- c. Phenazepam

d. Epinephrine tartrate

- e. Promedol (Trimeperidine)

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

- a. Contains other parts of the target plant
- b. Has first-degree vermin infestation

c. Contains poisonous plants

- d. Contains excessive moisture
- e. Contains other non-poisonous plants

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

- a. Cashier's check
- b. Expense invoice
- c. Profit invoice

d. Disbursement cash order

- e. Receipt for issuing money

28. 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. Anthracene derivatives
- b. Flavonoids

c. Cardiac glycosides

- d. Alkaloids
- e. Phenolic compounds

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

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

e. Constipation

30. Under the current legislation, full or partial exemption of persons and legal entities from tax payment is called:

- a. Tax system
- b. Subject to taxation

c. Tax concession

- d. Tax rate
- e. Tax

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

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

e. Thermopsis grass

32. 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. Seeds

b. Leaves

c. Roots

d. Grass

e. Flowers

33. 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. Payment for the goods purchased for the business needs

b. Receipt of funds for advance salary payments

c. Withdrawing sales proceeds for the transfer to the current account

d. Salary payments

e. Issuing a cash sum to be accounted for

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

a. Stock of goods

b. Medical cosmetics

c. Prescription and production

d. Ready-made dosage forms

e. Over-the-counter sales

35. 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. High risk of seizures

b. Increased ototoxicity of aminoglycosides

c. Increased hepatotoxic action of aminoglycosides

d. Increased hematotoxicity of gentamicin

e. High risk of allergic reactions

36. 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. Staff leasing

b. Organization profitability

c. Product diversification

d. Organization culture

e. Business expansion

37. A pharmacist has prepared a liquid mixture. What component was added last into the vial?

a. Simple syrup

b. Purified water

c. Tincture of valerian

d. 20% sodium bromide solution

e. Potassium bromide

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

a. Self-financing pharmacies and pharmacies financed from the state budget

b. State, community-owned, and private pharmacies

c. Compounding and retail pharmacies

d. Pharmacies with centralized and decentralized accounting

e. Retail and hospital pharmacies

39. 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. Oxidation

b. Phosphorylation

c. Reduction

d. Hydroxylation

e. Hydrolysis

40. 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. Tocopherol
- b. Ergocalciferol
- c. Cholecalciferol
- d. Phylloquinone (Phytomenadione)
- e. Retinol**

41. 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. Methoxyphenylacetic acid
- b. Sulfomolybdenum
- c. Hypophosphite
- d. Aminomethyl alizarin acetic acid
- e. Thioacetamide**

42. What parameter is measured using a drum friability tester during tablet quality control?

- a. Impurities
- b. Dissolution
- c. Uniformity of dosage
- d. Abrasion resistance**
- e. Disintegration

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

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

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

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

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

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

46. What prescription form is used to prescribe psychotropic drugs in their pure form or in a mixture with indifferent substances for the dispensation free of charge or at a discount?

- a. Two copies of prescription form f-3
- b. Two copies of prescription form f-1
- c. Prescription form f-3
- d. Prescription form f-1
- e. Two prescription forms f-1 and f-3**

47. 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. Ethyl alcohol
- b. Purified water
- c. Dimexide (dimethyl sulfoxide)
- d. Glycerine**

e. Atropa belladonna tincture

48. 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. Solpadeine

**b. Phenobarbital**

c. Digoxin

d. Analgin (Metamizole)

e. Novocaine

49. According to the law regulating labour remuneration, the businesses must establish their compensation plan in the following document:

a. Decree

**b. Collective agreement**

c. Statement

d. Job description

e. Contract of delivery

50. 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. Capsaicin**

b. Ephedrine

c. Colchicine

d. Schisandrin

e. Inulin

51. 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. Semina Hippocastani

b. Folia Fragariae

c. Folia Menthae piperitae

**d. Folia Urticae**

e. Fructus Hippophaes

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

a. Fat-soluble

b. -

c. Gastrically absorbed

d. Water-soluble

**e. Intestinally absorbed**

53. 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 a slightly alkaline medium

c. They must be extracted in an acidic medium

d. They must be extracted in a weakly acidic medium

e. They must be extracted in an alkaline medium

54. 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. Inhibition of histamine synthesis

b. Gastroesophageal reflux

**c. Accumulation of residual bradykinin in the blood**

d. Increased tone of the cough center

e. Exacerbation of chronic bronchitis

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

**a. Cyanogen bromide reagent**

b. Hydrochloric acid

c. Cobalt nitrate solution

- d. Chromotropic acid disodium salt
- e. Silver nitrate solution

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

- a. The solution colors blue and becomes colorless after the addition of ammonia solution
- b. A white precipitate forms, which is insoluble in a diluted hydrochloric acid
- c. A black precipitate forms, which dissolves if a diluted sodium hydroxide solution is added
- d. A pale yellow ether-soluble precipitate forms**

e. An intense blue coloring appears

57. 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. Cough**

c. Abdominal pain

d. Tinnitus

e. Nausea

58. 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. Seasonal accumulation

**b. Current demand**

c. Specific demand

d. Prior delivery

e. Single delivery

59. A 46-year-old man came to a dispensing chemist complaining of a dry cough. What antitussive drug can he be recommended?

a. Tripsin

**b. Oxeladin**

c. Bromhexine

d. Sodium bicarbonate

e. Acetylcysteine

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

**a. Preservatives**

b. Pectic materials

c. Thickeners

d. Solubilizers

e. Emulsifiers

61. Snake venom-based drugs are widely applied in treatment of locomotor apparatus diseases. Main components of these venoms are:

a. Phenol-alcohols

**b. Toxic proteins**

c. Alkaloids

d. Glucosinolates

e. Cardiac glycosides

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

a. From 3 to 6 years of age

b. Under 10 years of age

c. Under 6 years of age

**d. Under 3 years of age**

e. Under 16 years of age

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



a. Opalescent mixture

b. Emulsion

c. True solution

d. High-molecular compound solution

e. Colloidal solution

64. What property of the tablet mass determines the most how fast a matrix hole of the tablet press machine is filled?

a. Humidity

b. Porosity

c. Bulk density

d. Fluidity (flowability)

e. Relative density

65. 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. Lansoprazole

b. Bismuth subcitrate

c. Omeprazole

d. Famotidine

e. Ranitidine

66. 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. -

c. Current

d. Preliminary

e. Final

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

a. Alcoholic hydroxyl

b. Phenolic hydroxyl

c. Aldehyde group

d. Ethoxy group

e. Methoxy group

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

a. Drug manufacturer

b. Physician

c. Patient

d. Pharmacist

e. Head manager of the retail pharmacy

69. 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 decrease, demarketing

b. Demand leveling, synchromarketing

c. Demand increase, remarketing

d. Demand making, conversion marketing

e. Demand stimulation, promotional marketing

70. Simultaneous application of doxycycline hydrochloride and oral contraceptive causes:

a. -

b. Increase of the antibacterial effect of doxycycline

c. Reduction of oral contraceptives effectiveness

d. Increase of oral contraceptives effectiveness

e. Reduction of the antibacterial effect of doxycycline

71. 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. beta-adrenergic blockers

**b. Nitrates**

c. Statins

d. Anticoagulants

e. Calcium antagonists

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

a. Altan

**b. Cholosas**

c. Phytolyt

d. Chophytol

e. Allochol

73. 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. Cyanocobalamin**

b. Nicotinic acid

c. Thiamine

d. Pyridoxine

e. Riboflavin

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

a. 45 minutes

b. 15 minutes

**c. 40 minutes**

d. 25 minutes

e. 30 minutes

75. A patient suffering from bronchial asthma was diagnosed with essential hypertension. What antihypertensive drug is contraindicated for this patient?

**a. Propranolol**

b. Amlodipine

c. Verapamil

d. Hypothiazid (Hydrochlorothiazide)

e. Captopril

76. 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. Silybum fruits

b. Fennel fruits

**c. Schisandra seeds**

d. Flax seeds

e. Pumpkin seeds

77. 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. Tannins

b. Fatty oil

**c. Saponins**

d. Anthracene derivatives

e. Alkaloids

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

a. Nimesulide

**b. Ibuprofen**

c. Diclofenac sodium

d. Acetylsalicylic acid

e. Naproxen

79. 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. Agar agar, alginic acid
- d. Sodium bicarbonate, agar agar
- e. Starch, alginic acid

80. 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 extraction from one liquid using another liquid
- b. The characteristic of biopolymer molecules that does not allow them to pass through semi-permeable membranes**
- c. The process of heating the extract
- d. The process of electrolyte action
- e. The process of gas absorption

81. What technological method is used to prepare powders with dyes?

- a. Mixing in ascending order, from smaller to larger volume
- b. The principle of <<three layers>>**
- c. Mixing in descending order, from larger to smaller volume
- d. The dye is added last, after the mixture is prepared
- e. Preliminary sifting

82. 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. Monthly**
- b. Annually
- c. Daily
- d. -
- e. Quarterly

83. 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. Riboflavin
- b. Sulfur**
- c. Methylene blue
- d. Brilliant green
- e. Furacilin (Nitrofurantoin)

84. 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. Tachyphylaxis**
- b. Tolerance
- c. Synergism
- d. Antagonism
- e. Withdrawal syndrome

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

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

86. 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. Red

b. White

c. Green

d. Turquoise

e. Blue

87. When pressed, tablets stick to the tablet press. Why such adhesion occurs?

a. Excessive moisture of the tablet substance and high pressure

b. Heterogeneity of the granulated material

c. High specific density of the powders

d. Lamellar crystals in the tablet powder

e. Inadequate flowability of the tablet substance

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

a. Thickeners

b. Leavening agents

c. Fillers

d. Antioxidants

e. Corrigents

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

a. Amoxicillin

b. Bismuth subcitrate

c. Omeprazole

d. Clarithromycin

e. Metronidazole

90. There are various groups of adjuvants used in tablet production. What is the function of excipients?

a. To improve disintegration

b. To improve the taste

c. To create necessary adhesive force between particles

d. To make pills of a certain weight

e. To improve the flowability of granular material

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

a. 3 years

b. 3 months

c. 5 years

d. 10 years

e. 1 year

92. 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. Nitrofurazone (Nitrofurazone)

b. Benzocaine

c. Morphine hydrochloride

d. Theophylline monohydrate

e. Sodium benzoate

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

a. Garden sage

b. Three-lobed beggarticks

c. Purple passionflower

d. Elecampane

e. Lesser periwinkle

94. Capsaicin is the main active substance of Capsicum annuum. It belongs to the following class of bioactive substances:

- a. Flavonoids
- b. Anthracene derivatives

c. Alkaloids

- d. Iridoids
- e. Phenolic compounds

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

a. Rhododendron tomentosum

b. Origanum vulgare

- c. -
- d. Matricaria chamomilla
- e. Thymus serpyllum

96. A dispensing chemist uses iodometry (back titration) for quantitative determination of caffeine medicinal substance. What indicator is used in this case?

- a. Litmus paper
- b. Eriochrome black
- c. Phenolphthalein
- d. Phenol red

e. Starch

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

a. Polysaccharides

b. Flavonoids

- c. Alkaloids
- d. Coumarins
- e. Saponins

98. How often should a pharmacy make an inventory of its fixed assets?

- a. At least twice a year
- b. At least thrice a year

c. Once a year

- d. Once every three years
- e. At least once in a quarter

99. 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. Personal
- b. -
- c. Autocratic
- d. Intuitive

e. Collegial

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

- a. Double-slide tablet press machine
- b. Disintegrator
- c. Dismembrator

d. Three-roll ointment mill

e. Excelsior

101. The main method of quantitative determination of corticosteroids is:

a. Spectrophotometry

- b. Acidimetry
- c. Cerimetry
- d. Potentiometry
- e. Argentometry

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

- a. Cephalosprins
- b. Penicillins

- c. Carbapenems
- d. Aminoglycosides

**e. Macrolides**

103. What medicine is used for the symptomatic treatment of meteorism?

- a. Platyphyllin
- b. Papaverine

**c. Simethicone**

- d. Drotaverine
- e. Almagel (Algeldrate + magnesium hydroxide)

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

- a. Velvet antlers
- b. Human blood

**c. Bovine blood**

- d. Bovine spleen
- e. Bovine trachea

105. Genetically induced adverse reaction to a certain drug is caused by various enzyme defects.

Name this reaction:

- a. Rebound effect
- b. Steal syndrome

**c. Idiosyncrasy**

- d. Dysbiosis
- e. Withdrawal syndrome

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

- a. Esophagus
- b. Oral cavity
- c. Rectum

**d. Intestine**

- e. Stomach

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

- a. Blue

**b. Pink**

- c. Yellow
- d. Violet
- e. Green

108. 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. Withdrawal syndrome

**b. Tolerance**

- c. Sensitization
- d. Cumulation
- e. Idiosyncrasy

109. A pharmaceutical factory produces ointments. Name the stage of the manufacturing process that allows to obtain a uniform ointment:

- a. Ointment concentrate production
- b. Vehicle production

**c. Homogenization**

- d. Mixing components with the vehicle
- e. Dispersion

110. The following substance is used as an extractant in production of liquid extracts:

**a. Ethanol**

- b. Chloroform
- c. Glycerine

- d. Dichloroethane
- e. Acetone

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

- a. Choice of strategy
- b. Setting goals and tasks

**c. Strategy assessment**

- d. Environment assessment and analysis
- e. Analysis of organisation's internal strength and weaknesses

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

- a. Sodium bromide

**b. Sodium sulfite**

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

113. 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. Apigenin and luteolin
- b. Quercetin and rutin
- c. Atropine and hyoscyamine
- d. Arbutin and methyl arbutin

**e. Thymol and carvacrol**

114. Eucalyptus essential oil is used as an antiseptic. What excretory structures of a leaf accumulate this substance?

- a. Glandular <<spots>>
- b. Essential oil glandules

**c. Essential oil cavities**

- d. Glandular hairs
- e. Secretory cells

115. 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. Mentha piperita
- c. Melissa officinalis
- d. Thymus serpyllum
- e. Sambucus nigra

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

- a. A statistics authority

**b. The company itself**

- c. The National Bank of Ukraine
- d. A revenue and duties authority
- e. The Ministry of Finance

117. 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. 500 mg
- b. 300 mg

**c. 100 mg**

- d. 200 mg

e. 400 mg

118. A certain herbal raw material is used to make Flamin cholagogue. Name this material:

a. Tanacetii flores

b. Crataegi flores

c. Violae herba

d. Helichrysi arenarii flores

e. Meliloti herba

119. 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. Coumarins

b. Iridoids

c. Lignans

d. Xanthones

e. Flavonoids

120. 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. 80%

b. 50%

c. 60%

d. 70%

e. 100%

121. 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. Suppositories

c. Spray

d. Lozenges

e. Tablets

122. 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. Marketing department

b. Stores development

c. Shipping department

d. Finance department

e. Supply department

123. 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. Anthracene derivatives

c. Cardiac glycosides

d. Coumarins

e. Lignans

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

a. Easily oxidized solutions

b. Solutions of the salts formed by weak bases and strong acids

c. Solutions of the substances that cannot be thermally sterilized

d. Solutions of the salts formed by strong bases and weak acids

e. Solutions of the substances that need special purification

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

a. Kanamycin monosulfate

b. Streptomycin sulfate

c. Doxycycline hydrochloride



- d. Amoxicillin
- e. Lincomycin hydrochloride

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

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

127. 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. Satisfied
- c. Declining
- d. Excessive**
- e. Negative

128. What qualitative reaction proves the presence of anthracene-derived compounds in a herbal raw material?

- a. Reaction with iron sulfate
- b. Reaction with Fehling's reagent
- c. Reaction with Dragendorff's reagent

**d. Reaction with an alkali**

- e. Reaction with ammonium iron(III) sulfate

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

- a. Anthracene derivatives
- b. Alkaloids

**c. Essential oils**

- d. Iridoids
- e. Flavonoids

130. Pharmaceutical logistics is aimed at advertising, search for customers, entering into agreements, after-sales service, and transportation. What type of logistics is it?

- a. Procurement
- b. Human resources
- c. Information

**d. Sales**

- e. Manufacturing

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

**a. Lyophilization**

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

132. What means of demand stimulation can be applied by pharmacy management among its employees?

- a. Coupons
- b. In-store advertising
- c. -
- d. Layout of medical products in shop-windows and on shelves

**e. Bonuses**

133. One of the substances listed below is textbfNOT a vitamin:

- a. Nicotinic acid
- b. Calcium pantothenate
- c. Calcium pangamate

d. Ergocalciferol

**e. Calcium gluconate**

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

a. Once every 3 days

b. Once in a week

**c. Once in a shift**

d. Once every 5 days

e. Once every 10 days

135. 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. Slime

**b. Inulin**

c. Pectin

d. Fatty oils

e. Essential oils

136. 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. 40

**b. 20**

c. 50

d. 10

e. 30

137. 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. Phenolphthalein**

b. Calconcarbonic acid

c. Sodium eosinate

d. Methylene blue

e. Potassium chromate

138. Commercial and financial activity of a pharmacy involves using returnable tare. Which of the following containers are returned to the supplier?

a. Packaging materials

**b. Metal cylinders**

c. Paper boxes

d. Glassware

e. Glass-stoppered bottles

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

a. Dibazol (Bendazol)

b. Ofloxacin

c. Quinocide

d. Chingamin (Chloroquine)

**e. Nitroxoline**

140. 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. With a 25% discount

b. For the full cost

c. For 50% of the cost

d. With a 10% discount

**e. 100% free**

141. 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. Charity
- d. Industrial activity
- e. Commercial activity

142. A man with arterial hypertension was recommended the following to increase the antihypertensive effect of a diuretic:

- a. Increase the amount of liquids in the diet
- b. Decrease the amount of table salt in the diet**

- c. Increase the amount of table salt in the diet
- d. Increase the physical exertion
- e. Decrease the physical exertion

143. 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. Market with pure (free) competition**

- b. Pure monopoly market
- c. Oligopolistic market
- d. Limited monopoly market
- e. -

144. 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. Urotropin
- b. Sodium bromide
- c. Sodium iodide
- d. Streptocide (Sulfanilamide)

**e. Furacilin (Nitrofurazone)**

145. 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. Remarketing
- b. Synchromarketing

**c. Demarketing**

- d. Stimulation marketing
- e. Conversion marketing

146. 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. -
- b. To create the image of high-quality medicine manufacturer
- c. To maximize profits
- d. To gain leadership due to high quality of manufactured medicines

**e. To ensure business survival**

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

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

**e. Levofloxacin**

148. Nitroxoline with sodium hydroxide solution produces:

- a. Green-black coloration
- b. White precipitate
- c. Yellow precipitate
- d. Violet coloration

**e. Orange-red coloration**

149. Dried Vaccinium berries can be used as an astringent. The astringent properties of this herbal

raw material are caused by the presence of certain substances. Name these substances.

**a. Tannins**

b. Flavonoids

c. Alkaloids

d. Iridoids

e. Polysaccharides

150. 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. Motivation

b. Regulation

**c. Control**

d. Planning

e. Organization

151. In the process of industrial production, certain adjuvants are included in the soft dosage forms as pH regulators. Name these adjuvants:

a. Glycerine, dimethyl sulfoxide

**b. Citric acid, sodium phosphate salts**

c. Sodium lauryl sulfate, tween emulsifiers

d. Benzalkonium chloride, benzyl alcohol

e. Paraffin, spermaceti

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

a. Relative density

b. Compressibility

**c. Flowability**

d. Lyophilic property

e. Compression ratio

153. 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. Fixed price

b. Free-of-control price

c. Indicative price

**d. Controlled price**

e. Contract price

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

a. 2 years after the current one

**b. 5 years**

c. 3 years

d. 7 years after the current one

e. 1 year after the current one

155. 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. Silver nitrate

c. Iodine monochloride

d. Hydrochloric acid

**e. Cerium sulfate**

156. 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. Public relations, sponsorship

**b. Consumer-oriented sales promotion**

c. Salesmen-oriented sales promotion

- d. Personal sale
- e. Middlemen-oriented sales promotion

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

158. Galenical preparations include:

- a. Granules
- b. Tinctures**
- c. Capsules
- d. Spansules
- e. Aerosols

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

- a. 1:30
- b. 1:10**
- c. 1:400
- d. 1:50
- e. 1:20

160. 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. Report on the movement of packaging
- d. Product revaluation notice

**e. Purchase order**

161. 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. No manganese salt admixtures
- b. Analytical grade pure
- c. Anhydrous, analytical grade pure
- d. Type <<for injections>>

**e. Chemically pure, depyrogenated**

162. 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. Tormentillae radices
- b. Araliae mandshuricae radices**
- c. Calami radices
- d. Glycyrrhizae radices
- e. Taraxaci radices

163. 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. Hyponatremia
- b. Hypernatremia
- c. Hyperkalemia**
- d. Hypocalcemia
- e. Hypoglycemia

164. What hypotensive drug is an agent of choice for the patients suffering from arterial hypertension with concomitant type I diabetes mellitus?

a. Lisinopril

b. Labetalol

c. Hydrochlorothiazide

d. Atenolol

e. Carvedilol

165. 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. Anthracene derivatives and tannins

b. Coumarins and phenol glycosides

c. Essential and fatty oils

d. Flavonoids and essential oils

e. Iridoids and vitamins

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

a. Values, traditions, and behavioral norms characteristic of company employees

b. License agreement

c. Relevant pharmaceutical practices

d. Specifics of manufacturing process

e. Legislation in force

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

a. Acoustic

b. Circulation

c. Mechanical

d. Pneumatic

e. Ultrasonic

168. 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. T-shaped hairs along the leaf margin

b. Simple capitate hairs

c. Bast fibers, tracheids, starch, vessels

d. Capitate, flask-shaped, and stinging hairs; cystoliths; vessels of the conducting bundle, veins, druses of calcium oxalate

e. Many-armed, two-armed, and simple hairs

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

a. Spironolactone

b. Furosemide

c. Chlorthalidone

d. Clopamide

e. Indapamide

170. 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. Rhamnus cathartica

b. Ribes nigrum

c. Schisandra chinensis

d. Prunus padus

e. Vaccinium myrtillus

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

a. Liabilities

b. Assets

c. Debit

d. Credit

e. Account

172. 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. Labor productivity

b. Stock of goods

c. Turnover

d. Profitability

e. Price index

173. 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

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

a. For quick preparation of infusions and decoctions in pharmacy practice

b. To be used as ready-made medicines

c. For preparation of dry extracts

d. For preparation of tinctures

e. For preparation of thick extracts

175. Optical rotation angle of substances is determined under the temperature of  $20^{\circ}\text{C}$ , 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. Distribution coefficient

b. Relative density

c. Specific optical rotation

d. Refractive index

e. Optical density

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

a. Protargol

b. Basic bismuth nitrate

c. Potassium iodide

d. Sodium chloride

e. Camphor

177. Specify the optimal method for industrial production of suppositories:

a. Pressing

b. Hand-rolling

c. Stamping

d. Lyophilization

e. Pouring into moulds

178. 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. Expectorants

b. Antispasmodics

c. Probiotics

d. Mucolytic agents

e. Antitussive drugs

179. 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. Organizational management methods

**b. Economic management methods**

- c. Legal management methods
- d. Indirect control methods
- e. Psychosocial management methods

180. 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

181. To identify ethanol an analytical chemist needs to conduct a:

- a. Thalleioquin test
- b. Ninhydrin test

**c. Iodoform test**

- d. Hydroxamate test
- e. Murexide test

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

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

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

**a. Dispensing extemporaneous medicines manufactured by a pharmacy according to the inpatient prescriptions**

- b. Dispensing prescription medicines to the people
- c. Dispensing over-the-counter medicines to the people
- d. Dispensing medicines according to outpatient prescriptions
- e. Dispensing medical products to outpatients

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

185. 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. Omeprazole
- b. Tetracycline
- c. Metronidazole

**d. Bismuth subcitrate**

- e. Tinidazole

186. What reagent is used to identify sodium sulfate?

- a. Cobalt chloride
- b. Silver nitrate
- c. Calcium chloride

**d. Barium chloride**

- e. Iron(III) chloride

187. 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. Socioeconomic**



- b. Psychographic
- c. Behavioral
- d. Geographic

**e. Demographic**

188. 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 bristles. This herbal raw material can be identified as:

a. Fructus Sorbi

**b. Fructus Rosae**

- c. Fructus Ribis nigri
- d. Fructus Hippophaes
- e. Fructus Viburni

189. A pharmacy has received a prescription for tincture. What herbal raw material can be used to make this dosage form?

**a. Valerian rootstock**

- b. Buckthorn bark
- c. Rhubarb roots
- d. Oak bark
- e. Arrow-wood bark

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

a. No more than 10 days

**b. No more than 3 days**

- c. No more than 6 days
- d. No more than 7 days
- e. No more than 14 days

191. 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. Accounting form

**d. Payment order**

e. Cash register receipt

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

a. Vertical job rotation

**b. Staff turnover**

- c. Recruiting
- d. Horizontal job rotation
- e. -

193. Select a non-steroid estrogen from the list below:

- a. Retabolil (Nandrolone)
- b. Adrenalin
- c. Progesterone
- d. Prednisolone

**e. Synoestrol (Hexestrol)**

194. 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. Once every 10 years

**b. Once every 5 years**

- c. Once every 3 years
- d. Once every 2 years
- e. Every year

195. A pharmaceutical company provides its employees with free lunches. What needs does it try to

satisfy according to Maslow's theory of motivation?

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

e. Physiological

196. 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. Bradycardia
- b. Reduced sensitivity
- c. Dysbacteriosis
- d. Bronchospasm

e. Withdrawal syndrome

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

- a. 15 minutes
- b. 3 minutes
- c. 60 minutes
- d. 30 minutes

e. 5 minutes

198. A pharmaceutical company produces Lugol's iodine solution. By type of solvent this solution belongs to the following group:

- a. Water solutions
- b. Alcohol solutions
- c. Chloroform solutions

d. Glycerine solutions

e. Oil solutions

199. 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 vital drugs
- b. Only imported drugs
- c. Only drugs produced domestically

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

e. Any drugs registered for distribution in Ukraine

200. 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. Demographic

- b. Psychographic
- c. Geographical
- d. -
- e. Behavioral

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

- a. Cumulation
- b. Constipations

c. Bronchospasm

- d. Drug dependence
- e. Blood pressure rise

202. Vinblastine and Vincristine demonstrate antitumor activity. Name the herbal raw material used in production of these medicines:

- a. Folia Berberidis
- b. Herba Selaginis

c. Folia Catharanthi rosei

d. Herba Vincae minoris

e. Rhizomata Nupharis lutei

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

e. Decreases ofloxacin absorption

204. 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. Iron(III) chloride solution
- b. Potassium permanganate solution
- c. Magnesium sulfate solution
- d. Sodium bicarbonate solution
- e. Sodium nitrate solution

205. 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. 0.25 g
- d. 0.3 g
- e. 0.1 g

206. 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. Mortars
- c. Sieve
- d. Scalpel
- e. Tweezers

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

- a. One month
- b. Five years
- c. Three years
- d. The prescription must be returned to the patient
- e. One year

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

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

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

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

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

- a. Thermopsis grass

b. Marshmallow roots

c. Arctostaphylos leaves

d. Buckthorn bark

e. Mint leaves

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

a. Corporate income tax

b. Value added tax

c. Rent

d. Individual income tax

e. Real estate tax

212. 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. Mordant black

c. Potassium chromate

d. Phenolphthalein

e. Tropeolin 00

213. 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. Lack of understanding of the information's importance

b. Poor feedback

c. Psychological distance

d. Semantic barriers

e. Nonverbal barriers

214. "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. Rhizomata et radices Eleuterococci

d. Radices Ginseng

e. Radices Araliae elata

215. A patient suffers from avitaminosis C) The physician has prescribed a course of phytotherapy. What herbal raw material is rich in this vitamin?

a. Cortex Quercus

b. Fructus Sorbi

c. Folium Menthae piperitae

d. Cortex Viburni opuli

e. Rhizoma Tormentillae

216. 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. Sodium chloride

d. Chloramine

e. Acetyl chloride

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

a. Streptomycin sulfate

b. Streptocide (Sulfanilamide)

c. Ephedrine hydrochloride

d. Osarsolum

e. Magnesium oxide

218. What quality parameter must be additionally controlled during the industrial production of

suspension eye drops?

- a. Color
- b. Quantitative determination
- c. Transparency
- d. Sterility

e. Particle size

219. Powders are a solid dosage form for internal or external use. What stage is **NOT** a part of powder production?

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

220. 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. Diversification
- c. Market penetration

d. Market development

e. Product development

221. 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. Hematotoxicity

b. Cardiotoxicity

- c. Nephrotoxicity
- d. Chondrotoxicity
- e. Hepatotoxicity

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

a. Production cost

- b. Income
- c. Breakeven
- d. Markup
- e. Margin

223. 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 Absinthii
- c. Folia Menthae piperitae
- d. Folia Betulae
- e. Folia Melissa

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

a. ACE inhibitors

- b. Tranquilizers
- c. Calcium antagonists
- d. Antipsychotics
- e. Antacids

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

e. Excise tax

226. A patient measures out a necessary dose of a mixture, using a tablespoon. How many milliliters

of liquid does one tablespoon contain?

- a. 15
- b. 25
- c. 10
- d. 20
- e. 5

227. When examining a substance with an ester group, you can conduct a reaction that produces:

- a. Indophenol
- b. Iron(III) hydroxamate
- c. Diazonium salt
- d. Berlin blue
- e. Azo dye

228. 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. Vertical descending
- b. Interlevel
- c. Horizontal
- d. Vertical ascending
- e. External

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

- a. Collectivism
- b. Strict control procedure
- c. Individualism
- d. Strictly formalized management system
- e. Focus on individual results

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

- a. Camphor
- b. Streptocide (Sulfanilamide)
- c. Sulfur
- d. Ethazole
- e. Basic bismuth nitrate

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

232. What type of marketing should be used if the demand for some medicines in the pharmaceutical market is negative?

- a. Synchromarketing
- b. Remarketing
- c. Demarketing
- d. Incentive marketing
- e. Conversion marketing

233. 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. Complexonometry
- b. Iodochlorometry
- c. Permanganatometry
- d. Nitritometry
- e. Iodometry

234. 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. Zinc sulfate solution
- b. Potassium bromate solution
- c. Perchloric acid solution**
- d. Sodium edetate solution
- e. Sodium nitrite solution

235. A pharmacy sells various medicines. What medicine is a subject to strict accounting in a special inventory log?

- a. Retabolil (Nandrolone)
- b. Microfollin (Ethinylestradiol), tablets
- c. Tramadol, tablets**
- d. Gentamicin sulfate
- e. Hydrocortisone acetate

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

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

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

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

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

240. What medicines should be listed at the beginning of an extemporaneous drug formulation according to the regulations?

- a. Narcotic substances**
- b. Solutions
- c. All medicines are written in a random order
- d. Medicines included in the Essential Medicines List
- e. Substances that are hard to comminute

241. 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**

242. 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. Equisetum arvense grass
- b. Centaurium grass**
- c. Centaurea cyanus flowers
- d. Vaccinium vitis-idaea leaves
- e. Birch leaves

243. 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 end tabular. What base should be used to make this ointment?

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

244. 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. Glibenclamid
- c. Butamide (Tolbutamide)
- d. Glucose**
- e. Insulin

245. Phytochemical workshop of a factory manufactures pancreatin. What is the source material for obtaining pancreatin?

- a. Pancreas of pigs or cattle**
- b. Gastric mucosa of pigs
- c. Heart of cattle
- d. Lungs of cattle
- e. Egg white

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

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

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

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

248. Spectrophotometric analysis of anthracene derivatives contained in buckthorn bark is based on the following reaction:

- a. Anthraquinone reduction
- b. Sublimation
- c. Oxidation of anthracene derivatives
- d. Production of phenolates with alkali-ammonia solution**
- e. Salt precipitation

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

- a. Hydrogen**



- b. Nitrogen
- c. Fluoride

d. Chlorine

- e. Oxygen

250. 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. Panaxosides
- d. Purpurea glycosides
- e. Ginkgosides

251. 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. Accompanying statement to the bag with cash
- c. Transactions ledger

d. Fiscal cash receipt for the goods/services

- e. Cash book

252. 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. Decreased blood pressure
- c. Increased blood pressure
- d. Red coloring of urine
- e. Vomiting

253. 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. All of the listed
- c. Financial statement of the supplier

d. Motor waybill

- e. Contract of delivery

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

- a. A financially accountable person

b. An authorized person

- c. A pharmacist
- d. The head manager of the pharmacy
- e. A representative of the laboratory

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

- a. Economic planning

b. Pure competition

- c. Oligopoly
- d. Monopolistic competition
- e. Pure monopoly

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

- a. Silver nitrate
- b. Sodium nitrite
- c. Potassium permanganate

d. Iron (III) chloride

- e. Sodium sulfate

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

258. The chemical name of 2-benzyl-1H-benzimidazole hydrochloride corresponds with the following medicinal substance:

- a. Indometacin
- b. Omeprazole
- c. Dibazol (Bendazolum)**
- d. Vicasol (Menadione)
- e. Phenazepam

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

- a. Have a clear formal structure
- b. Resist changes in the organization**
- c. Are formed for the implementation of the manufacturing process
- d. Are formed upon the request of the head of the organization
- e. -

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

- a. Emulsions
- b. Infusion solutions
- c. Suspensions
- d. Ointments
- e. Infusions and decoctions**

261. 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. Ciprofloxacin
- b. Alcoholic iodine solution
- c. Benzylpenicillin (Penicillin G) sodium salt
- d. Isoniazid
- e. Rifampicin**

262. 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. Incorrect
- c. Irrational
- d. Irregular**
- e. Inadequate

263. 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. Ipratropium bromide
- c. Oxeladin
- d. Budesonide
- e. Acetylcysteine**

264. 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. Inelastic demand

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

**e. Elastic demand**

265. What medicinal substance can be mixed with the powder mass without an additional comminution?

a. Streptocide (Sulfanilamide)

**b. Starch**

- c. Camphor
- d. Menthol
- e. Salicylic acid

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

a. Platyphyllin

b. Papaverine

**c. Ursodeoxycholic acid**

- d. Domperidone
- e. Loperamide

267. 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. Three years after the current one**

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

268. 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. Employee appointed to this task by the head manager**

- b. Tax officer
- c. Pharmacist
- d. Officer of a local division of the state inspectorate for drug quality control
- e. Head manager

269. 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. Indexation
- b. Insurance
- c. Liquidation
- d. Bankruptcy

**e. Diversification**

270. 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. Combined marketing (matrix model)
- b. Regional marketing
- c. Functional marketing

**d. Product-based marketing**

e. Segment marketing

271. 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. Financial

**b. Concluding**

- c. Concurrent
- d. Preliminary
- e. -

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

- a. Talcum
- b. Sodium bicarbonate
- c. Bolus alba
- d. Basic bismuth nitrate
- e. Sugar

273. 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. Assets
- b. Long-term liabilities
- c. Equity capital
- d. Current liabilities
- e. Non-current assets

274. 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. Trademark
- b. Marketing
- c. Supply
- d. Advertisment
- e. Communications

275. When obtaining individual substances, the choice of an extractant is determined mainly by its:

- a. Cost
- b. Selectivity toward active substances
- c. Anti-hydrolysis effect
- d. Pharmacological inertness
- e. Thermostability

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

- a. Special
- b. Local, indirect
- c. Nationwide, indirect
- d. Local, direct
- e. Nationwide, direct

277. To stabilize the suspension a pharmacist has used potassium soap. What substance does this suspension contain?

- a. Camphor
- b. Menthol
- c. Basic bismuth nitrate
- d. Sulfur
- e. Phenyl salicylate

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

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

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

- a. Sale of ready-to-use drugs
- b. Sale of drugs to chronically ill patients
- c. Sale of over-the-counter drugs

d. Sale to other organizations for commercial use

- e. Sale of extemporal dosage forms

280. What minimum amount of a toxic substance can be weighed on one-gram hand scales?

- a. 0.03 g
- b. 0.04 g

c. 0.05 g

- d. 0.1 g
- e. 0.02 g

281. What structure is authorized to issue permits for individual or collective provision of audit services in Ukraine?

- a. The State Service of Ukraine for Drug Control

b. The Audit Chamber of Ukraine

- c. The Control and Revision Office
- d. The State Regulatory Service of Ukraine
- e. The State Service of Ukraine for Medicines

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

- a. A certain discomfort, a feeling that something is lacking
- b. -
- c. Something that is important for a person

d. A conscious incentive to act in a certain way

- e. Psychological characteristics of people that help them acquire certain types of knowledge

283. How should the tablets of pancreatin enzyme preparation be taken?

- a. 2 hours before a meal
- b. Regardless of food intake
- c. 1 hour before a meal

d. During eating

- e. 1 hour after a meal

284. What amount of the standard pharmacopoeial formaldehyde solution must be taken to prepare 100 mL of a 20% formalin solution?

- a. 30 mL
- b. 10 mL
- c. 54 mL

d. 20 mL

- e. 5 mL

285. 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. Diclofenac sodium
- b. Acetylsalicylic acid

c. Paracetamol

- d. Nimesulide
- e. Indomethacin

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

- a. Anesthesin
- b. Benzoic acid

c. Camphor

- d. Streptocide
- e. Vinilin (polyvinyl butyl ether)

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

- a. External
- b. Free

c. Residual

- d. Equilibrium
- e. Osmotic

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

- a. Dispersion
- b. Action prolongation
- c. Emulsification
- d. Stabilization

**e. Create pressure in the package**

289. 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. External
- b. Horizontal

**c. Vertical ascending**

- d. Vertical descending
- e. Intra-level

290. 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. Alkaloids
- b. Tannins
- c. Vitamins

**d. Flavonoids**

- e. Polysaccharides

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

- a. Bendazol

**b. Aceclidine**

- c. Nicotinic acid
- d. Nitroxoline
- e. Metronidazole

292. 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. Reye syndrome

**b. Tolerance**

- c. Anaphylactic reaction
- d. Withdrawal syndrome
- e. Idiosyncrasy

293. 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. Sociocultural**

- b. Technological
- c. Political
- d. Economical
- e. Legal

294. 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. Summation
- b. Cumulation
- c. Tolerance

**d. Dependence**

- e. Potentiation

295. 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. Radices Ononidis
- b. Radices Taraxaci
- c. Rhizomata et radices Inulae**
- d. Rhizomata et radices Rubiae
- e. Radices Althaeae

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

- a. Added the powder onto the water surface and waited until complete dissolution**
- b. Dissolved during comminution
- c. Dissolved in purified water in a vial for dispensing
- d. Dissolved in warm water
- e. Dissolved in cold water

297. 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. Folia Belladonnae**
- c. Herba Thermopsidis lanceolatae
- d. Herba Chelidonii
- e. Radices Berberidis

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

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

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

300. 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. Microcapsules
- b. Dragee tablets
- c. Dragee**
- d. Granules
- e. Spansules with polymer coating

301. 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. Caffeine and sodium benzoate
- b. Caffeine**
- c. Theophylline
- d. Theophylline ethylenediamine
- e. Theobromine

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

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

303. 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. Sulfates
- b. Fluorides
- c. Bromides
- d. Iodides
- e. Nitrites**

304. Pharmacy as a healthcare facility fulfills three main functions. Its manufacturing function includes:

- a. Pharmaceutical care
- b. Storage of medical products
- c. Providing access to pharmaceutical information
- d. Preparation of individual formulations**
- e. Health education of the population

305. 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. Pessary
- b. Ovoid
- c. Cylinder
- d. Torpedo**
- e. Sphere

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

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

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

308. 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. Titrated sodium edetate solution
- c. Saturated sodium chloride solution
- d. Titrated hydrochloric acid solution**
- e. Iodized potassium iodide solution

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

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

310. A pharmacist prepares a suspension with a hydrophobic substance. What stabilizer is necessary for this dispersion system?

- a. Sodium chloride
- b. Methyl cellulose**



- c. Boric acid
- d. Glucose
- e. Nipagin (Methylparaben)

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

- a. 2 copies of F-3 form
- b. F-3 form**
- c. 2 copies of F-1 form
- d. F-1 form
- e. F-1 and F-3 forms

312. 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. Multichannel**
- b. Administered
- c. Corporate
- d. Contractual
- e. Horizontal

313. 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. Ceftriaxone
- b. Penicillin
- c. Azithromycin
- d. Ampicillin
- e. Gentamicin**

314. 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 x100%
- b. Ratio of the sum of profits to the sum of turnover x100%**
- c. -
- d. Ratio of the sum of profits to the sum of cost price of the goods x100%
- e. Ratio of the sum of profits to the sum of expenses x100%

315. 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. Meeting the cultural and social needs of employees
- b. Promotion
- c. Clear distribution of tasks between the employees**
- d. -
- e. Material reward (bonuses, increments, pay rise)

316. 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. Receipt
- b. Cash expense order**
- c. Invoice
- d. Cash income order
- e. Remains unregistered documentarily

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

318. 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-Chlorobenzoic acid
- e. n-Aminophthalic acid

319. How long should a retail business that deals in medicines keep the quality certificates issued by drug manufacturers?

- a. 2 years
- b. 1 year
- c. 5 years
- d. 6 months
- e. 3 years**

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

- a. Pectin substances
- b. Thickeners
- c. Emulsifiers
- d. Preservatives**
- e. Solubilizers

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

322. 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. 40%
- b. 20%
- c. 30%
- d. 10%
- e. 50%**

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

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

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

- a. Doxycycline hyclate

- b. Chloramphenicol
- c. Lincomycin hydrochloride
- d. Streptomycin sulfate

**e. Benzylpenicillin potassium salt**

326. To identify vicasol (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. Magnesium
- d. Calcium
- e. Zinc

327. When making ampoules, certain admixtures are introduced into the glass to change its properties. Why is boron oxide added into the glass?

- a. To lower its melting temperature
- b. To increase its thermal resistance

**c. To improve its chemical resistance**

- d. To change its color
- e. To increase its mechanical strength

328. 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. Acceleration of metabolism and excretion
- b. Inhibition of hepatic microsomal enzymes

**c. Antibiotic malabsorption**

- d. Relative overdosage
- e. Mutual potentiation

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

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

**e. Fluidized bed dryer**

330. 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. Enalapril
- b. Bisoprolol

**c. Doxazosin**

- d. Verapamil
- e. Propranolol

331. "Novo-Passit" preparation is used as a sedative. It is manufactured from the following herbal raw material:

**a. Passiflora grass**

- b. Acorus calamus rhizomes
- c. Taraxacum roots
- d. Viburnum bark
- e. Populus nigra buds

332. 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  $+10^{\circ}$  to  $+13^{\circ}$

**b. From  $+0,2^{\circ}$  to  $-0,2^{\circ}$**

c. From  $+50^{\circ}$  to  $+56^{\circ}$

d. From  $-102^{\circ}$  to  $-105^{\circ}$

e. From  $-48^{\circ}$  to  $-51^{\circ}$

333. 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. Refractometer
- c. Viscometer
- d. Hydrometer

e. Polarimeter

334. A pharmaceutical company produces galenic preparations. These preparations contain:

- a. Preservatives
- b. Smell-correcting agents
- c. Taste-correcting agents
- d. Only one active substance

e. A sum of active substances

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

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

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

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

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

- a. Fluorescein
- b. Iodoform
- c. Diazonium salts

d. Azo dye

e. Murexide

338. 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. Iridoids
- b. Vitamins
- c. Flavonoids

d. Polysaccharides

e. Coumarins

339. The following herbal raw material is a source of tannin in pharmaceutical manufacture:

- a. Rhizomata et radix Sanguisorbae
- b. Fructus Viburni
- c. Rhizomata Bistortae
- d. Rhizomata Bergeniae

e. Folium Cotini coggygriae

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

- a. Regional state administration
- b. The Ministry of Health
- c. Inspectorate for medicine quality control
- d. Local council

e. Pharmacy

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

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

- a. Insufficient amount of lubricants**
- b. Insufficient amount of diluents
- c. Insufficient amount of adhesives
- d. Insufficient amount of dyes
- e. Insufficient amount of leaveners

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

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

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

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

345. 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. Plum
- c. Apricot
- d. Acacia
- e. Cherry**

346. 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. Tannins
- b. Flavonoids
- c. Vitamins

- d. Anthracene derivatives**
- e. Alkaloids

347. 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. One-level channel
- c. Four-level channel
- d. Two-level channel**
- e. Zero-level channel

348. 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. Oxidation of the medicinal substance
- b. Decarboxylation of the medicinal substance
- c. Precipitation of the formed salt

d. Reduction of the medicinal substance

**e. Hydrolysis of the ester group**

349. 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. Polysaccharides

**b. Iridoids**

c. Alkaloids

d. Essential oils

e. Saponins

350. 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. Ethyl acetate**

b. Benzaldehyde

c. Sulfur dioxide

d. Ammonia

e. Pyridine

351. 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. Ipratropium bromide

**c. Salbutamol**

d. Budesonide

e. Fluticasone

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

a. Metronidazole

**b. Nitrofural (Nitrofurazone)**

c. Nitroxoline

d. Phthalazole (Phthalylsulfathiazole)

e. Norfloxacin

353. 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. Vinblastine

**b. Reserpine**

c. Adonitoxin

d. Hyoscyamine

e. Atropine

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

a. Unithiol

b. Potassium chloride

c. Naloxone

d. Acetylcysteine

**e. Protamine sulfate**

355. Direct argentometric titration using the Mohr method can be used for quantification of sulfathiazole (norsulfazole). What indicator is used in such analysis?

a. Starch

b. Tropeolin 00

**c. Potassium chromate**

d. Methylene blue

e. Bromophenol blue

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

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

e. Distribution coefficient

357. 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. Iron(III) hydroxamate

d. Azo dye

e. Aurine dye

358. 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. Cushing's syndrome
- b. Steroid diabetes

c. Oral candidiasis

- d. Osteoporosis
- e. Osteoarthritis

359. 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. Scopolamine hydrobromide
- b. Caffeine monohydrate

c. Pachycarpine hydroiodide

- d. Quinine sulfate
- e. Codeine phosphate

360. 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. alpha-adrenergic blockers
- b. Ganglionic blockers
- c. Calcium antagonists

d. beta-adrenergic blockers

e. Diuretics

361. 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. Diclofenac sodium tablets

c. Paracetamol rectal suppositories

- d. Ibuprofen tablets
- e. Acetylsalicylic acid tablets

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

- a. Expectorant
- b. Litholytic
- c. Astringent
- d. Cardiotonic

e. Detoxicant

363. 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. By package size

c. Corporate block layout

**d. Among competitors**

e. Doubling product facings

364. 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. Consolidation

b. Integration

**c. Diversification**

d. Intensification

e. Insurance

365. 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. Streptocide

c. Paracetamol

d. Ascorbic acid

**e. Methionine**

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

a. Acid value and peroxide value

b. Moisture content

c. Purification methods

**d. Particle size**

e. Dry residue

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

a. Starch

**b. Menthol**

c. Dermatol (bismuth subgallate)

d. Novocaine hydrochloride

e. Sulfur

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

a. Menthol should be comminuted with the emulsifier

b. Menthol should be comminuted in a mortar with ethanol

**c. Menthol should be dissolved in oil**

d. Menthol should be dissolved in the purified water

e. Menthol should be introduced as a suspension into the prepared emulsion

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

a. 2 weeks

b. 5 weeks

c. 3 weeks

d. 1 month

**e. 5-7 days**

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

**a. Prescription medicines**

b. Cosmetics

c. Disinfectants

d. Over-the-counter medicines

e. Dietary supplements

371. 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. Not accounted as assets

b. Goods



c. Non-negotiable tangible assets

d. Fixed assets

e. Package

372. Powder moisture content affects its:

a. Flowability

b. Particle shape

c. Solubility

d. Particle size

e. Homogeneity

373. 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. Inventory department

c. Department of finished dosage forms

d. Department of over-the-counter drugs

e. Department of curative cosmetics

374. 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. *Urtica dioica*

b. *Origanum vulgare*

c. *Atropa belladonna*

d. *Capsella bursa-pastoris*

e. *Mentha piperita*

375. 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. Lipids

b. Papaverine

c. Flavonoids

d. Atropine

e. Cytisine

376. 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 goals of the company

c. The stage of the product life cycle

d. Manufacturing costs

e. Marketing strategy of the company

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

a. Washing the herbal raw material with an extractant

b. Maceration

c. Extraction of primary juice

d. Dissolution

e. Mass transfer

378. Standard stactometer divides 1 ml of water into:

a. 20 drops

b. 25 drops

c. 10 drops

d. 30 drops

e. 15 drops

379. 50 ml of injection solution has been made in a pharmacy. Specify the process of solution sterilization:

a. 180°C - 30 minutes

b. 120°C - 8 minutes

c. 140°C - 12 minutes

d. 160°C - 15 minutes

e. 110°C - 15 minutes

380. 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. Polarimetry

b. Spectrophotometry

c. Polarography

d. Refractometry

e. Photocolorimetry

381. 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. Betula pendula

c. Foeniculum vulgare

d. Calendula officinalis

e. Crataegus sanguinea

382. 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 Eucalypti

b. Folia Farfarae

c. Folia Uvae-ursi

d. Folia Urticae

e. Folia Menthae

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

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

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

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

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

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

384. 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. 10 mL

b. 1 mL

c. 0.5 mL

d. 5 mL

e. 2 mL

385. 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. Moisture content

b. Mineral admixtures

c. Ash values (Total ash)

d. Extractive values

e. Acceptable admixtures

386. 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. Slime

**b. Anthracene derivatives**

- c. Alkaloids
- d. Flavonoids
- e. Saponins

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

**a. Act on the inventory results**

- b. Invoice
- c. Commercial report
- d. Inventory item description
- e. Checklist

388. 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. Datura Stramonium
- b. Atropa belladonna
- c. Hyoscyamus niger
- d. Solanum tuberosum

**e. Solanum laciniatum**

389. What imidazole derivative affects anaerobic microorganisms and protozoa and is effective against mixed infections?

- a. Asparcam (Potassium aspartate and magnesium aspartate)
- b. Caffeine
- c. Camphor
- d. Dibazol (Bendazol)

**e. Metronidazole**

390. 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. Before the formation of green fruits
- d. When the fruits are ripe
- e. After harvesting the fruits

391. A refractometer is used to identify and test the glycerine substance. What parameter is measured using this device?

- a. Optical density
- b. Dynamic viscosity
- c. Angle of rotation

**d. Refractive index**

- e. Melting point

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

- a. Self-development capability
- b. Profitability
- c. Success

**d. Culture**

- e. Capitalization level

393. 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 water**

- b. Dissolution in ethyl alcohol
- c. Dissolution in the melted base
- d. Dissolution in the minimal amount of castor oil
- e. Dissolution in the minimal amount of alcohol-water-glycerin mixture

394. 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. Proton pump inhibitors**
- c. Alpha-blockers
- d. Inhibitors of protein-degrading enzymes
- e. Beta-blockers

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

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

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

- a. Permanganatometry
- b. Mercurimetry
- c. Bromatometry**
- d. Complexonometry
- e. Argentometry

397. A phytochemical department of a factory produces Calendula tincture. What herbal raw material is used in the manufacturing process?

- a. Roots, rhizomes, and grass
- b. Roots
- c. Leaves and essential oil
- d. Grass
- e. Flowers**

398. 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. Indirect
- b. Direct**
- c. Combined
- d. Mediated
- e. Mixed

399. 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. Doctor's personal seal and signature
- b. Medical facility stamp, signature of the head manager of the medical facility, seal of the medical facility
- c. Signature of the head manager of the medical facility or signature of the deputy head manager for medical work
- d. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility
- e. Medical facility stamp, doctor's seal and signature, signature of the head manager of the medical facility, seal of the medical facility**

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

401. 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. Receptor sensitivity to low-density lipoproteins increases
- b. Risk of myopathy decreases
- c. Catabolism rate of low-density lipoproteins increases
- d. Cholesterol biosynthesis occurs mainly at night**
- e. Absorption of the drug increases at night

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

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

403. 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. Alcoholic hydroxyl
- c. Phenolic hydroxyl**
- d. Keto group
- e. Ester group

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

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

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

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

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

408. 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. Matrix
- b. Functional
- c. Adaptive
- d. Productive

**e. Linear**

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

a. Rectification

**b. Recuperation**

c. Lyophilization

d. Extraction

e. Sublimation

410. 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. 40 000 UAH

b. 30 000 UAH

c. 35 000 UAH

**d. 5 000 UAH**

e. 15 000 UAH

411. 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. Turnover balance sheet

d. Double entry

e. Business transactions log book

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

**a. Butyrol**

b. Cocoa butter

c. Wax

d. Spermaceti

e. Vaseline (petroleum jelly)

413. 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. Acteoside

**b. Aucubin**

c. Acorone

d. Atropine

e. Azulene

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

a. Conversion marketing

b. Stimulational marketing

c. Evolving marketing

**d. Remarketing**

e. Synchromarketing

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

a. Horizontal diversification

**b. Growth strategy**

c. Conglomerate diversification

d. Horizontal integration

e. Vertical integration

416. 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. Withdrawal syndrome**

- b. Bradycardia
- c. Bronchospasm
- d. Reduced sensitivity
- e. Dysbacteriosis

417. 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. Remarketing**

- c. Synchromarketing
- d. Conversion marketing
- e. Countermarketing

418. 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. -

- b. Power based on fear
- c. Coercive power
- d. Legitimate power

**e. Referent power**

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

- a. Sulfur
- b. Camphor
- c. Protargol

**d. Ethacridine lactate**

e. Streptocide (Sulfanilamide)

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

a. Consumers

**b. Expenses**

- c. Competitors
- d. State regulation of prices
- e. Participants in sales channels

421. 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. Leaves and flower heads**

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

422. 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 on the holiday
- c. To pay the salaries 10 days earlier

**d. To pay the salaries one day earlier**

e. To pay the salaries after the holiday

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

a. Ephedrine hydrochloride

**b. Xeroform**

- c. Protargol (silver proteinate)
- d. Menthol
- e. Camphor

424. What medicinal plant has anti-inflammatory and expectorant properties due to its content of triterpene saponins?

- a. *Panax ginseng*
- b. *Glycyrrhiza glabra*
- c. *Astragalus dasyanthus*
- d. *Orthosiphon stamineus*
- e. *Aralia mandshurica*

425. Which of the plants listed below contain inulin?

- a. *Rhamnus cathartica*, *Sorbus aucuparia*
- b. *Ledum palustre*, *Acorus calamus*
- c. *Salvia officinalis*, *Artemisia absinthium*
- d. *Juniperus communis*, *Thymus serpyllum*
- e. *Inula helenium*, *Helianthus tuberosus*

426. 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. Enalapril
- b. Amlodipine
- c. Losartan
- d. Hydrochlorothiazide
- e. Metoprolol

427. The chemical name of 2,2-(diphenylmethoxy)-N,N-dimethyl-ethanamine hydrochloride corresponds with the following medicinal substance:

- a. Ethylmorphine hydrochloride
- b. Lidocaine hydrochloride
- c. Papaverine hydrochloride
- d. Diphenhydramine hydrochloride
- e. Ciprofloxacin hydrochloride

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

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

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

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

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

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

431. 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. Bromphenol blue
- b. Methyl orange
- c. Ferroin



- d. Potassium chromate
- e. Phenolphthalein

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

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

- a. Erythromycin
- b. Gentamicin
- c. Ampicillin
- d. Tetracycline
- e. Penicillin

434. 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. Precipitate excessive active substances
- b. This kind of deviation is not important
- c. The tincture is a non-recoverable reject material
- d. Filter the tincture through adsorbent
- e. Dilute the tincture with extractant to normal concentration

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

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

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

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

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

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

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

439. 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. Telephone interview

**b. Targeted selection interview**

c. Preliminary interview

d. Submission of a resume

e. Filling in a questionnaire

440. A pharmacy visitor periodically feels constricting pain behind the sternum. Explain to this visitor, what contraindication exists for taking nitroglycerin.

a. Heart failure

b. Kidney failure

**c. Angle-closure glaucoma**

d. Pulmonary fibrosis

e. Peptic ulcer disease

441. 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. No**

d. Yes, it can sell all the batch that is already in its possession

e. Yes, if approved by the head manager of the pharmacy

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

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

b. Silver nitrate solution

c. Alcoholic iodine solution

d. Iodine dissolved in potassium iodide

e. Hydrochloric acid solution

443. 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. Production development

b. Integrated marketing

**c. Socio-ethical marketing**

d. Product development

e. Intensification of commercial effort

444. 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. Lisinopril

b. Spironolactone

**c. Furosemide**

d. Propranolol

e. Nifedipine

445. 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. Furacilin (Nitrofurazone)

**d. Copper sulfate**

e. Calcium gluconate

446. 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. Heating the extract

c. Electrolyte action

d. Ultrasound exposure

e. Extraction from one liquid using another

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

a. -

b. Mixed

c. Combined

d. Vertical

e. Horizontal

448. 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. Concentrated ammonia

b. Ninhydrin

c. Cyanogen bromide

d. 2,4-Dinitrophenylhydrazine

e. 2,4-Dinitrochlorobenzene

449. A pharmaceutical manufacturer sets the price for a drug basing on its prime cost with premium. What model of pricing is it?

a. Competitive

b. Demand-based

c. Breakeven

d. Cost-based

e. Supply-based

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

a. Sodium benzoate solution

b. Sodium nitrite solution

c. Calcium chloride solution

d. Barium chloride solution

e. Ammonium oxalate solution

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

a. Acidimetry

b. Argentometry

c. Alkalimetry

d. Complexometric titration

e. Nitritometric titration

452. 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. License for production of medicines

b. Quality certificate

c. -

d. State registration certificate

e. Trade patent

453. 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. Purified water

c. Spiritus saponatus

d. Vaseline oil (liquid paraffin)

e. Peach oil

454. Various admixtures are possible in the process of harvesting, drying, and primary processing of herbal raw material. Organic admixtures include:

a. Metallic objects

b. Soil particles

- c. Glass fragments
- d. Sand

**e. Non-harvested parts of the same plant**

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

- a. Novelty of the drugs
- b. Quality of the drugs

**c. Competitiveness of the drugs**

- d. Life cycle stage of the drugs
- e. Market stability

456. 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. Analysis of the statistical reference books
- b. Analysis of the company's statistical reports
- c. Analysis of the periodical publications
- d. Analysis of the scientific publications

**e. Customer survey**

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

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

458. 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 once a month
- c. At least twice a month

**d. At least twice a week**

- e. At least once a week

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

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

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

461. 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. Potassium
- b. Chlorides

**c. Iron**

- d. Sulfates
- e. Ammonium salts

462. Medicinal substance had been received for chemical analysis. Biuret test was performed for identification. Name this substance:

**a. Bromisoval**

- b. Diphenhydramine
- c. Benzoic acid
- d. Iodoform
- e. Dipyrone (Metamizole)

463. 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. -
- c. Chief physician

**d. Pharmacy management**

- e. Local authorities

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

- a. Jaundice
- b. Hypoglycemia
- c. Constipation

**d. Osteoporosis**

- e. Hypotension

465. 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. Elastic

**b. Unitary**

- c. Perfectly inelastic
- d. Inelastic
- e. Perfectly elastic

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

- a. Diphenylcarbazone

**b. Starch**

- c. Phenolphthalein
- d. Bromphenol blue
- e. Murexide

467. 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. Criminal

**b. Social**

- c. Administrative
- d. Personal
- e. Legal

468. 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. Flax seeds

**b. Mustard seeds**

- c. Nigella seeds
- d. Fenugreek seeds
- e. Plantago psyllium seeds

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

- a. Extract from the State Register of Medicines
- b. Technical regulations for the drug

**c. Conclusion on the quality of the drug imported into Ukraine**

- d. Written Control Passport
- e. Drug Quality Standard

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

- a. NMR and UV-visible spectroscopy

**b. Visual optical**

- c. Limulus test
- d. Amperometric
- e. Gravitational

471. 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. Informal
- b. Combined
- c. Mechanistic
- d. -

**e. Organic**

472. What is the purpose of bulking agents in production of tablets?

- a. To improve adhesion of particles to each other
- b. To improve granulate flowability
- c. To improve the taste
- d. To obtain tablets of a certain mass

- e. To improve tablet breakup

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

474. 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. Sanitary-epidemiological certificate
- c. Certificate of compliance with hygiene regulations

**d. Quality certificate**

- e. Sanitary passport

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

- a. Enalapril
- b. Corglycon (convallatoxin)

**c. Nitroglycerine**

- d. Prazosin
- e. Captopril

476. 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. Lactose**

- d. Rice starch
- e. Mannitol

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

- a. Midantan (Amantadine)
- b. Thiopental sodium

**c. Polyvinylpyrrolidone**

- d. Menthol
- e. Piracetam

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

- a. Silicone bases
- b. Adsorption bases
- c. Diphylic (amphiphilic) emulsion bases
- d. Hydrophilic bases
- e. Hydrophobic bases

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

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

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

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

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

- a. Writing off
- b. Conducting an official investigation

c. Recording as received

- d. Confiscation
- e. Elimination

482. 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. Precursors
- b. Toxic substances
- c. Psychotropic substances
- d. Potent substances
- e. Narcotic substances

483. What is the shortest goods distribution channel for medical products?

- a. Two-level
- b. One-level
- c. Three-level

d. Zero-level

- e. Four-level

484. 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. Cerimetry
- b. Iodometry
- c. Bromatometry
- d. Polarimetry

e. Argentometry

485. 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. Negative
- c. Unsatisfied
- d. Hidden
- e. Satisfied

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

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

488. 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. 45-55 °C
- b. 25-35 °C
- c. 15-20 °C**
- d. 30-45 °C
- e. 80-100 °C

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

490. What medicine is used for anesthesia and cannot be prescribed to outpatients, according to Decree №360?

- a. Sodium thiopental**
- b. Suprastin (Chloropyramine)
- c. Anaesthesin (Benzocaine)
- d. Metoprolol
- e. Midecamycin

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

- a. Antiasthmatic
- b. Analgesic
- c. Anticonvulsant
- d. Expectorant
- e. Antidepressant**

492. 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. Counteractive**
- b. Synchromarketing
- c. Conversion
- d. Remarketing
- e. Stimulating

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

- a. Payment for the goods purchased for the household needs**



- b. Receipt of the proceeds from sales
- c. Coverage of the shortages revealed during the stock-taking
- d. Return of unused accountable funds
- e. Receipt of the funds for salary payment

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

- a. Diversification
- b. Etiquette
- c. Integration

**d. Culture**

e. -

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

- a. Buds
- b. Bark**
- c. Flowers
- d. Roots
- e. Inflorescences

496. 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. -
- b. Furosemide
- c. Hypothiazide (Hydrochlorothiazide)
- d. Amlodipine

**e. Captopril**

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

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

498. 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. Rotor-pulsation apparatus, dismembrator
- b. Liquid whistle, magnetostrictive source**
- c. Disintegrator, electrical impulse plasmolyzer
- d. Centrifugal mixer with rotating housing
- e. Disintegrator, liquid whistle

499. 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. 0.04 g
- b. 0.02 g**
- c. 0.03 g
- d. 0.05 g
- e. 0.01 g

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

- a. Phenolic hydroxyl
- b. Amide group
- c. Alcoholic hydroxyl

**d. Aldehyde group**

e. Ester group

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

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

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

503. 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. Indomethacin
- b. Acetylsalicylic acid
- c. Ibuprofen
- d. Diclofenac sodium
- e. Celecoxib

504. Camomile flowers are a popular medicinal substance in scientific medicine. What plant is the source of this herbal raw material?

- a. *Anthemis arvensis*
- b. *Leucanthemum vulgare*
- c. *Anthemis cotula*
- d. *Chamomilla recutita*
- e. *Tripleurospermum inodorum*

505. 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. Base salary
- c. Pension benefit
- d. Incentive pay
- e. Additional salary

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

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

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

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

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

- a. 4.0-7.5 g
- b. 3.0-7.0 g
- c. 1.0-4.0 g
- d. 2.0-6.5 g
- e. 1.5-6.0 g

509. Each medical product that a pharmacy receives should have its quality certificate. How long should these certificates be kept by a pharmacy?

- a. 6 years
- b. 3 years**
- c. 1 year
- d. 2 years
- e. 5 years

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

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

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

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

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

- a. Under CO<sub>2</sub>-free conditions
- b. In metal containers
- c. Separate from the others**
- d. Under normal conditions
- e. Under the temperature of -5°C

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

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

514. 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. Potassium bromate
- b. Sodium nitrite
- c. Perchloric acid**
- d. Sodium hydroxide
- e. Iodine

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

516. What preparation has an antiemetic effect?

- a. Aluminum phosphate
- b. Metoclopramide**
- c. Loperamide
- d. Sodium bicarbonate

e. Clarithromycin

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

a. Methylcellulose

**b. Pepsin**

c. Starch

d. Protargol

e. Gelatine

518. An analytical chemist uses nitritometry for quantitative determination of procainamide hydrochloride. What indicator is used in this case to determine the titration endpoint?

**a. Tropaeolin 00**

b. Methyl orange

c. Xylenol orange

d. Methyl red

e. Phenolphthalein

519. 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. Enzymatic hydrolysis of cardiac glycosides**

b. Oxidation of resins

c. Oxidation of terpenoids

d. Volatilization of essential oils

e. Oxidation of phenolic compounds

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

a. Reparative

**b. Tonic**

c. Hepatoprotective

d. Antitumor

e. Sedative

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

a. Appearance

**b. Quality**

c. Trade dress

d. Marking

e. Pharmacological action

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

a. Tetracyclines

b. Aminoglycosides

c. Oxyquinolines

**d. Semisynthetic penicillins**

e. Nitrofurans

523. 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. Almagel

c. Phosphalugel (Aluminum phosphate)

**d. Omeprazole**

e. Famotidine

524. What adjuvants can increase the viscosity and melting temperature of an ointment base?

**a. Paraffin, spermaceti**

b. Sodium lauryl sulfate

c. Ethanol, purified water

d. Benzalkonium chloride

e. Propylene glycol, gelatin

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

a. No less than 18 m<sup>2</sup>

b. No less than 250 m<sup>2</sup>

c. No less than 50 m<sup>2</sup>

d. No less than 30 m<sup>2</sup>

e. No less than 40 m<sup>2</sup>

526. What is the purpose of injectable tablets?

a. Implantation

b. Sublingual use

c. Oral use

d. Obtaining injectable solutions

e. Obtaining solutions for various pharmaceutical purposes

527. Bromatometry allows quantitative analysis of the following drug:

a. Sodium salicylate

b. Potassium acetate

c. Glutamic acid

d. Benzoic acid

e. beta-Alanine

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

a. Iron (II) sulfate

b. Molisch's reagent

c. Alkali

d. Fehling's reagent

e. Iron ammonium alum

529. 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. Proteolytic enzymes

b. Potassium iodide

c. Thermopsis preparations

d. Ambroxol

e. Licorice root

530. 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. Dysbacteriosis

b. Thrombus formation

c. Hyperkalemia

d. Hypokalemia

e. Hemorrhages

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

a. Oleum Lini

b. Oleum Cucurbitae

c. Oleum Maydis

d. Oleum Amygdalarum

e. Oleum Ricini

532. 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. Acceleration of bioactive substances extraction

b. Formation of biostimulants

c. Prevention of hydrolysis of bioactive substances

- d. Reducing the content of ballast substances
- e. Extending the shelf life of raw materials

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

534. 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. Calcium chloride

e. Protargol (Silver proteinate)

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

a. Furosemide

**b. Piracetam**

c. Bendazol

d. Tolbutamide

e. Phencarol (Quifenadine)

536. 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. Personal sale

b. Lobbying

c. Advertising

**d. Merchandising**

e. Public relations

537. According to the rules in force, workrooms should regularly undergo humid disinfection. How often should the floors be washed?

a. No less than once in a week

**b. No less than once in a shift**

c. No less than twice in a week

d. No less than thrice in a week

e. No less than twice in a month

538. 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. Decoction is made and filtered after complete cooling**

b. Infusion is made by means of cold maceration

c. Infusion is made in a slightly alkaline medium

d. Infusion is made and acidated with hydrochloric acid

e. Decoction is made and filtered immediately without cooling

539. 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. Phenazone

b. Dibazol (Bendazol)

c. Metronidazole

d. Papaverine hydrochloride

**e. Amoxicillin trihydrate**

540. A dispensing chemist-analyst identifies phenol, using a phenolic hydroxyl reaction. What reagent

is necessary for this reaction?

- a. Sodium sulfate
- b. Potassium chloride
- c. Iron(III) chloride
- d. Calcium chloride
- e. Sulfuric acid

541. What antibacterial agent is a part of the eradication therapy for H. pylori during the treatment of peptic ulcer disease of the stomach?

- a. Clarithromycin
- b. Meropenem
- c. Biseptol (Co-trimoxazole)
- d. Gentamicin
- e. Ceftriaxone

542. 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. VEN analysis
- b. PEST analysis
- c. ABC analysis
- d. -

e. SWOT analysis

543. What concept can be described as "...an area of exchange with its characteristic system of economic relations between goods manufacturers and consumers"?

a. Agreement

b. Market

- c. Marketing
- d. Sales
- e. Management

544. 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. Rheopolyglukin (Dextran)
- c. Haemodes
- d. Fresh frozen plasma

e. Prednisolone

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

a. 7 days

- b. 5 days
- c. 2 days
- d. 12 hours
- e. 24 hours

546. 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. Thermopsis alterniflora
- c. Ononis arvensis
- d. Styphnolobium japonicum
- e. Bidens tripartita

547. 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. Teratogenic

- b. Carcinogenic
- c. Fetotoxic
- d. Embryotoxic
- e. Mutagenic

548. 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. Heparin
- c. Nitroglycerin
- d. Nitrosorbide (Isosorbide dinitrate)
- e. Nifedipine

549. What lubricants are used in tablet manufacturing?

- a. Starch paste
- b. Calcium stearate, stearic acid
- c. Tween 80, Aerosil
- d. Water, ethanol
- e. Solutions of high-molecular compounds

550. Paracetamol reaction with hydrochloric acid, followed by addition of potassium dichromate, produces the following:

- a. Triphenylmethane dye
- b. Schiff base
- c. Azo dye
- d. Aurin dye

e. Indophenol dye

551. 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. Boric acid
- b. Barium sulfate
- c. Sodium benzoate

d. Resorcin

e. Sodium chloride

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

- a. Nondurable goods
- b. Unsought goods
- c. Convenience goods

d. Service

e. Specialty goods

553. The "Bon-pharm" 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. Product promotion
- c. Publicity
- d. Lobbying

e. Sponsorship

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

- a. Isohydricity
- b. Isotonicity
- c. Isoviscosity

d. Osmolality

e. Apyrogenicity

555. 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. Iodoform test

c. <<Silver mirror>> reaction

d. Hydroxamic reaction

e. Azo dye formation

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

a. Securinine nitrate

b. Ergotamine

c. Novopassit

d. Vinblastine

e. Glaucine hydrochloride

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

a. No accounting documentation needs to be kept

b. An inventory list needs to be drawn up

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

558. 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. Brokers

d. Agents

e. Consignees

559. 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. Functional

c. Divisional

d. Linear

e. Matrix

560. 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. Psychographic approach

c. -

d. Geographical approach

e. Demographic approach

561. An analytical chemist should use the following solution to identify sodium-containing substances:

a. Barium hydroxide

b. Potassium pyroantimonate

c. Potassium carbonate

d. Potassium permanganate

e. Sodium citrate

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

a. Potassium permanganate solution

b. Sodium nitrite solution

c. Potassium thiocyanate solution

d. Ammonia solution

e. Ammonium chloride solution

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

a. Dexamethasone

- b. Prednisolone
- c. Triamcinolone acetonide

**d. Fluocinolone acetonide**

- e. Hydrocortisone acetate

564. 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. Vacuum
- b. Syringe and devaporation
- c. Syringe and vacuum
- d. Devaporation

**e. Syringe**

565. 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. Specific gravity
- b. Angle of rotation**
- c. Refractive index
- d. Melting point
- e. Optical density

566. 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. Market entry**

- b. Testing phase
- c. Decline phase
- d. Saturation phase
- e. Maturity phase

567. 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. Control

**b. Motivation**

- c. Planning
- d. Delegation
- e. Organization

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

**a. Container with a lid that has holes in it**

- b. Parchment
- c. Ordinary paper capsules
- d. Gelatin capsules
- e. Wax paper

569. 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. "Skim-the-cream" strategy
- b. Tender pricing strategy
- c. Following the leader

**d. Deep penetration into the market**

- e. -

570. 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 a week
- b. In 3 days
- c. In 10 days
- d. In 5 days

e. In a month

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

- a. Narcotic substances in their pure form at the full price
- b. Anabolic steroids at the full price
- c. Psychotropic drugs at the full price

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

- e. Clophelin (clonidine) tablets at the full price

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

- a. Folia Salviae
- b. Folia Betulae
- c. Folia Menthae piperitae
- d. Folia Eucalypti
- e. Folia Absinthii

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

a. Macrocrystalline

- b. Coloring
- c. Volatile
- d. Colored
- e. Microcrystalline

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

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

e. 4,0

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

- a. Diltiazem
- b. Furosemide
- c. Triamterene
- d. Bisoprolol
- e. Prazosin

576. 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. Alkaloids
- b. Anthraquinones
- c. Glycosides
- d. Tannins
- e. Iridoids

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

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

578. Every pharmacy as a business has its income and expenditure operations. What business transaction will result in a summary increase of stocked goods?

- a. Money transfer from a bank to the cash desk
- b. Receipt of low-value wearing goods
- c. Debt recovery from a person accountable
- d. Issuing money to be accounted for

**e. Goods receipt from the supplier**

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

- a. Cream
- b. Ointment
- c. Paste
- d. Gel

**e. Liniment**

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

**a. Ambroxol**

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

581. 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. Hematotoxic
- b. Hepatotoxic

**c. Chondrotoxic**

- d. Nephrotoxic
- e. Neurotoxic

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

**a. Methyl orange**

**b. Starch**

- c. Murexide
- d. Bromophenol blue
- e. Phenolphthalein

583. 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 an alkali**

- b. Reaction with Molisch reagent
- c. Reaction with iron(II) sulfate
- d. Reaction with ammonium iron(III) sulfate
- e. Reaction with Fehling reagent

584. Medicinal dyes should be stored in a special cabinet. Which of the listed medical products is a dye:

**a. Ethyl alcohol**

**b. Brilliant green**

- c. Ascorbic acid
- d. Glucose
- e. Hydrogen peroxide

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

- a. Rifampicin
- b. Amikacin
- c. Methacycline

**d. Ampicillin**

**e. Cephalixin**

586. A 25-year-old man is diagnosed with acute pyelonephritis of moderate severity. What drugs should be prescribed for etiologic therapy?

- a. Antiarrhythmic drugs
- b. Nonsteroidal antiinflammatory drugs

**c. Antimicrobial agents**

- d. Anticholinesterase drugs
- e. Glucocorticoids

587. What fatty oil should be used to make an ointment with reparative properties?

- a. Oleum Jecoris
- b. Oleum Lini**

- c. Oleum Persicorum
- d. Oleum Cucurbitae
- e. Oleum Cacao

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

- a. Calendula officinalis
- b. Bidens tripartita
- c. Frangula alnus**

- d. Eucalyptus globulus
- e. Salvia officinalis

589. 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. Immunosuppressants
- b. Sorbents
- c. Antacids
- d. Probiotics**

- e. Enzymatic agents

590. 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. Physical control**

- d. Organoleptic control
- e. Written control

591. 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. Observation
- d. -
- e. Survey

592. 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. Ascorbic acid
- c. Benzoic acid

- d. Nicotinic acid**

- e. Salicylic acid

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

- a. Mentha
- b. Leonurus
- c. Hypericum
- d. Atropa belladonna

- e. Styphnolobium japonicum**

594. 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. Xylometazoline**

- b. Dexamethasone

- c. Acyclovir
- d. Paracetamol
- e. Lactulose

595. 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. Arsenite ion
- c. Ammonium ion
- d. Carbonate ion
- e. Nitrate ion

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

597. Various groups of propellants are used in production of aerosols. What group does carbon dioxide CO<sub>2</sub> belong to?

- a. Compressed gases
- b. Liquefied gases
- c. Non-volatile gases
- d. Rarefied gases
- e. Volatile gases

598. Phenyl salicylate can be identified by the smell of phenol that is produced when the following is added into the preparation:

- a. AgNO<sub>3</sub>
- b. NaCl
- c. CuSO<sub>4</sub>

- d. H<sub>2</sub>SO<sub>4</sub>
- e. CoCl<sub>2</sub>

599. What medicine obtained from ergot is used in gynecology and has a hemostatic effect?

- a. Vinblastine
- b. Digitoxin
- c. Vincatol
- d. Galantamine hydrobromide

- e. Ergotamine hydrotartrate

600. 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. Nitroglycerin
- b. Amlodipine
- c. Trimetazidine
- d. Metoprolol
- e. Nifedipine

601. What herbal raw material is used for the industrial production of Quercetin medicine?

- a. Fructus Hippocistidis rhamnoides
- b. Herba Violae tricoloris
- c. Flores Helichrysi arenarii
- d. Herba Polygoni avicularis

- e. Fructus Sophorae japonicae

602. 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. Phenolic hydroxyl
- b. Aliphatic amino group
- c. Primary aromatic amino group
- d. Ester group
- e. Carboxyl group

603. A pharmacy has received a prescription for colloid solution. Name this solution:

- a. Collargol solution
- b. 5% glucose solution
- c. Sodium chloride solution
- d. Burow's solution
- e. Nonaqueous solution

604. Oblong tablets are called:

- a. Dragee
- b. Pellets
- c. Caplets
- d. Forte tablets
- e. Capsules

605. 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. One-level distribution channel
- b. Two-level distribution channel
- c. Direct distribution channel (zero channel)
- d. Four-level distribution channel
- e. Three-level distribution channel

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

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

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

- a. Roots
- b. Rhizomes
- c. Fruits
- d. Grass
- e. Flowers

609. 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 minimal quantity of purified water
- b. Dissolve in vaseline oil
- c. Dissolve in alcohol
- d. Dissolve in molten cocoa butter
- e. Dissolve in Dimexid (Dimethylsulfoxide)

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

- a. Continental method

- b. Physical condensation
- c. Solvent replacement method
- d. Chemical condensation

**e. Dispersion with stirring**

611. 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. 70 parts of anhydrous lanolin and 30 parts of water**
- d. 90 parts of anhydrous lanolin and 10 parts of water
- e. 50 parts of anhydrous lanolin and 50 parts of water

612. The dispensing chemist of a pharmacy has prepared 5 formulations. Which one of them requires total chemical control?

**a. Atropine sulfate eyedrops**

- b. Streptocide (sulfanilamide) ointment
- c. Baby powder
- d. Riboflavin-containing powders
- e. Kvater's mixture

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

- a. Magnesium sulfate
- b. Sodium chloride
- c. Zinc oxide

**d. Potassium chromate**

e. Calcium chloride

614. Pharmacies use cash registers during the sales of medicines. Name the document for the accounting of Z-reports:

**a. Transactions ledger**

- b. Receipt book
- c. Cash book
- d. Customers ledger
- e. Prescription logbook

615. 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. Strategic planning

**b. Operational planning**

- c. Business planning
- d. Financial planning
- e. -

616. 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. Chloramine solution
- b. Lanthanum(III) nitrate solution
- c. Glyoxal-hydroxanil solution
- d. Thiourea solution

**e. Diphenylamine solution**

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

- a. Althaea roots
- b. Valerian roots and rhizomes

**c. Foxglove leaves**

- d. Sage leaves
- e. Motherwort grass

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

a. Magnesium sulfate

**b. Glucose**

c. Sodium chloride



- d. Potassium chloride
- e. Novocaine

619. 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

620. 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. Osarsol
- b. Collargol (Colloidal silver)
- c. Copper sulfate

d. Pepsin

e. Tannin

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

- a. Sodium bicarbonate
- b. Sodium thiosulfate
- c. Caffeine and sodium benzoate
- d. Ascorbic acid

e. Novocaine (Procaine)

622. 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. Decline
- b. Growth
- c. Development
- d. Introduction

e. Maturity

623. A pharmacy prepares 10% sodium chloride injection solution. What sterilization would be optimal in this case?

- a. Sterile filtration through membrane
- b. Autoclave chamber with high-pressure saturated steam
- c. Gas sterilization
- d. Irradiation sterilization
- e. Dry-heat sterilization

624. What substance forms a film coating of tablets and can be dissolved only in intestinal juice?

- a. Acetylphthalylcellulose
- b. Diethylaminomethylcellulose
- c. Sodium carboxymethyl cellulose
- d. Benzylaminocellulose
- e. Paraaminobenzoate of sugars

625. 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. Ammonia

- d. Formaldehyde
- e. Hydrogen sulfide

626. 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. Hydroxycoumarin esculin

b. Free coumarin

c. Furocoumarin psoralen

d. Pyranocoumarin visnadin

e. Furanochromon kelin

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

a. Herbogastrine

b. Urolesan

c. Olimetinum

d. Solutan

e. Bellasthesin

628. 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. Phenyl salicylate

b. Benzoic acid

c. Acetylsalicylic acid

d. Sodium benzoate

e. Salicylic acid

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

a. Laxative

b. Diuretic

c. Litholytic

d. Choleretic

e. Sedative

630. 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. 25%

b. 20%

c. 5%

d. 95%

e. 75%

631. 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. Point-of-sale advertising

c. Film advertising

d. Print advertising

e. Out-of-home advertising

632. 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. Personal selling

c. Sales stimulation

d. Direct marketing

e. Merchandising

633. 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. Ambroxol

b. Suprastin (Chloropyramine)

c. Prednisolone

d. Papaverine hydrochloride

e. Euphylline (Aminophylline)

634. What medicinal substance is a derivative of morphinan?

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

635. 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. 40%
- b. 95%
- c. 60%
- d. 90%
- e. 70%

636. 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. Nitroxoline
- d. Furadonin (Nitrofurantoin)
- e. Furacilin (Nitrofurantoin)

637. 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 persicaria
- b. Polygonum bistorta
- c. Polygonum aviculare
- d. Polygonum hydropiper
- e. Polygonum alpinum

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

639. The essential oil of which plant contains zamazali, which is formed during steam distillation from matricin?

- a. Arnica montana
- b. Inula helenium
- c. Valeriana officinalis
- d. Melissa officinalis
- e. Chamomila recutita

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

641. 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, package, and labor

d. Cost of ingredients and package

e. Cost of ingredients

642. 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. Quinoline

b. Furan

c. Phenothiazine

d. beta-lactam

e. Pyridine

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

a. Chromatography

b. Titrimetry

c. Biological standardization

d. Gravimetry

e. Spectrophotometry

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

a. Medicine has entered the pharmaceutical market only recently and actual experience with its practical application is limited

b. Medicine contains substances that require additional research into their activity and side-effects

c. Medicine is available only for in-patient treatment

d. Medicine can cause no direct or indirect harm to the patient's health

e. Medicine is available only by prescription

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

a. Glycerin

b. Ethyl alcohol

c. Mint oil

d. Peach oil

e. Purified water

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

a. Porosity

b. Compaction (compression) coefficient

c. Bulk volume

d. Flowability

e. Compression value

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

a. Five years, not counting the current one

b. One year, not counting the current one

c. One month, not counting the current one

d. The receipt form is not kept by the pharmacy

e. Three years, not counting the current one

648. 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. Gentamicin

b. Amoxicillin

c. Tetracycline

d. Norfloxacin

e. Chloramphenicol

649. 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. Alkalimetry

b. Nitritometry

c. Argentometry

d. Complexonometry

e. Acidimetry

650. 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. Retor-shaped hairs

d. T-shaped hairs along the leaf edge

e. Branched and capitate hairs

651. 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. Turnover/production cost

d. Income/turnover

e. Turnover/income

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

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

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

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

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

653. How should the rectal ointments be applied?

a. Apply to the conjunctival mucosa

b. Apply to the nasal mucosa

c. Applied to the external genitalia

d. Apply to the affected area of the anus

e. Apply to the skin

654. A pharmacist has prepared a solid dosage form - a compound powder. What technological operation is textbfNOT a part of preparation process in this case?

a. Packing

b. Dosing

c. Comminution

d. Dissolution

e. Mixing

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 dispensing chemist

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 chief accountant

656. 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. Syringe and vapor condensation

b. Vapor condensation

c. Syringe

d. Syringe and vacuum

e. Vacuum

657. 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. Metoclopramide
- e. Clarithromycin

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

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

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

- a. They resist changes in the organization
- b. They are created to implement the production process
- c. The group leader receives authority from the group
- d. They form as a result of interest, sympathy
- e. They form spontaneously

660. 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. 7.5 mL
- c. 6.25 mL
- d. 12.5 mL
- e. 10 mL

661. To treat iron-deficiency anemia the following drug is usually prescribed:

- a. Ferroplex
- b. Vicasol (Menadione)
- c. Heparin
- d. Furagin (Furazidinum)
- e. Corticosteroids

662. To identify a medicinal substance, an analytical chemist performed a reaction of azo dye formation. This reaction is characteristic of the following medicine:

- a. Phenyl salicylate
- b. Benzocaine
- c. Acetylsalicylic acid
- d. Chlorpropamide
- e. Resorcinol

663. 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. Bisoprolol
- b. Nifedipine
- c. Digoxin
- d. Isosorbide dinitrate
- e. Nitroglycerine

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

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

665. What drug is used to treat hyperthyroidism?

- a. Insulin
- b. Prednisolone
- c. Oxytocin
- d. Metformin

**e. Mercazolil (Thiamazole)**

666. An analytical chemist identifies diphenhydramine hydrochloride (Dimedrol). What reagent produces a bright yellow coloring when reacting with this substance?

- a. Anhydrous acetic acid
- b. Diluted hydrochloric acid
- c. Diluted phosphoric acid
- d. Perchloric acid 0.1 M

**e. Concentrated sulfuric acid**

667. What is the driving force of the diffusion process during the extraction of a herbal raw material?

- a. Different concentration of the active substance in the raw material and extractant**
- b. Brownian motion of the particles
- c. Presence of a film membrane
- d. High temperature of the extractant
- e. High polarity of the extractant

668. 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. Salbutamol
- c. Butamirate
- d. Oxeladin
- e. Codeine phosphate

669. 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 10:00
- b. From 21:00 to 6:00
- c. From 00:00 to 8:00
- d. From 22:00 to 7:00

**e. From 22:00 to 6:00**

670. Presence of nitrate radical in metronidazole structure can be confirmed by reduction of nitrate radical to amino group with production of:

**a. Azo dye**

- b. Iodoform
- c. Indophenol
- d. Murexide
- e. Thiochrome

671. 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. Vitali-Morin reaction**

**b. Maltol test**

- c. Biuret test
- d. Thiochrome test
- e. Ninhydrin test

672. 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. Ketamine, 5% infusion solution, 2 ml №10**

**b. Ascorbic acid, 500 mg №30**

c. Clonidine, ampoules, 1 ml of 0,01% solution №10

- d. Tramadol, capsules, 0,05 №10
- e. Phenobarbital, tablets, 100 mg №6

673. 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. Naproxen
- b. Diclofenac

c. Ibuprofen

- d. Acetylsalicylic acid
- e. Nimesulide

674. 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. Melt a part of fatty vehicle and dissolve the substances there
- b. Dissolve the substances in the water heated to 45°C
- c. Introduce the substances as an emulsion

d. Introduce the substances as a suspension

- e. Melt all of fatty vehicle and dissolve the substances there

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

- a. Carbocysteine
- b. Ambroxol
- c. Bromhexine
- d. Trypsin

e. Acetylcysteine

676. 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. Transactions log book

- b. Invoices
- c. Cash deposit and cash withdrawal receipts
- d. Payment orders
- e. Payroll records

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

- a. Curved hemispherical receptacle with membranous bracts
- b. Solid spherical receptacle
- c. Spherical receptacle with membranous bracts
- d. Solid hemispherical receptacle

e. Conical, glabrous, and hollow receptacle

678. 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. Legal

- e. Economic

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

- a. Sodium chloride
- b. Polyvinyl alcohol

c. Benzalkonium chloride

- d. Methyl cellulose
- e. Acetate buffer

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

- a. Purified water, starch glue, sugar syrup, gelatin, carboxymethylcellulose solution
- b. Starch, glucose, kaolinite, magnesium oxide, sodium bicarbonate
- 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

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

a. Monetary funds

b. Fixed assets

c. Goods

d. Authorized capital

e. Accounts receivable

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

a. Sodium hypophosphite

b. Hydroxyquinoline

c. Barium chloride

d. Sodium tetraphenylborate

e. Thioglycolic acid

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. In the same order in which they are listed in the formulation

b. Last in the order of increasing ethanol concentration

c. After poisonous and narcotic substances are dissolved (before concentrates)

d. First

e. Last in the order of decreasing ethanol concentration

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

a. -

b. Head of a department

c. Pharmacist

d. Packer

e. Accountant

685. 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. Gentamicin

b. Ciprofloxacin

c. Clarithromycin

d. Amoxicillin/clavulanate

e. Cefazolin

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

a. A reticular matrix that contains the medicinal substance

b. Tablets covered in a fat-soluble coating

c. A dispersion of medicinal substances in polyethylene

d. Tablets covered in a film coating

e. Tablets with a dragee coating

687. 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. 10 minutes

b. 45 minutes

c. 15 minutes

d. 30 minutes

e. 25 minutes

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

a. Gastrointestinal bleeding

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

689. What indicator is used in iodometry for quantitative determination of caffeine in caffeine and sodium benzoate?

- a. Methyl orange
- b. Potassium chromate

**c. Starch**

- d. Eriochrome black
- e. Bromthymol blue

690. 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. Autocratic
- b. Democratic
- c. Authoritarian

**d. Liberal**

- e. Directive

691. 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. Sodium cobaltinitrite**

- c. Sodium hydroxide
- d. Magnesium sulfate
- e. Barium chloride

692. 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. Alpha-adrenergic agonists

**c. Nitrates**

- d. Calcium channel blockers
- e. Antispasmodics

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

- a. Formal

**b. Informal**

- c. Manufacturing
- d. Committee
- e. Commercial

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

- a. Folia Eucalypti
- b. Folia Absinthii
- c. Folia Uvae ursi
- d. Folia Salviae

**e. Folia Menthae piperitae**

695. 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. Concentrated HNO<sub>3</sub>
- b. K<sub>3</sub>[Fe(CN)<sub>6</sub>]
- c. NH<sub>3</sub>
- d. AgNO<sub>3</sub>

e. FeCl<sub>3</sub>

696. What technology should be chosen by a pharmacist to make a liquid dosage form, if it contains calcium gluconate?

- a. First grind it into powder when it is dry or with small amount of solvent added
- b. Dissolve in alkaline medium

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

- d. Dissolve in the water free of redox substances
- e. Add equal amount of sodium chloride

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

- a. Bank loan
- b. Prolonged loan

c. Commercial loan

- d. Term loan
- e. State loan

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

- a. Selective
- b. Sample
- c. Intensive
- d. Bulk

e. Exclusive

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

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

- b. Accounting form
- c. Cash withdrawal receipt
- d. Cash cheque
- e. Payment order

701. What herbal raw material contains alkaloid glaucine that has a strong antitussive effect?

- a. Chelidonium grass
- b. Belladonna grass
- c. Vinca minor grass
- d. Macleaya grass

e. Glaucium flavum grass

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

a. 100 mL

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

703. An analytical pharmacist uses cerimetry for quantification of nifedipine. What indicator is used in this method?

- a. Potassium chromate
- b. Methyl orange
- c. Tropeolin 00

d. Ferroin

e. Phenolphthalein

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

a. 1% phloroglucinol solution

b. 1% ammonium iron(III) sulfate solution

c. Sudan III solution

d. Dragendorff reagent

e. Alcoholic solution of methylene blue

705. Specify the fluid used to coat the forms for pouring of the suppositories with hydrophilic vehicles:

a. Dimethylsulfoxide

b. Purified water

c. Glycerine

d. Vaseline (petroleum jelly)

e. Glycerine-water solution

706. 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. Notification is optional

b. 10 working days before the closure

c. 20 working days before the closure

d. 1 month before the closure

e. 3 months before the closure

707. 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. Atropine sulfate

b. Drotaverine hydrochloride

c. Enterosgel

d. Diclofenac sodium

e. Cyanocobalamin

708. What preparation has an antacid effect?

a. Famotidine

b. Ranitidine

c. Aluminum phosphate

d. Pirenzepine

e. Omeprazole

709. What medicinal substance during interaction with a silver nitrate solution forms a white precipitate that quickly colors yellowish and then turns black?

a. Sodium thiosulfate

b. Sodium bromide

c. Hydrogen peroxide

d. Sodium chloride

e. Sodium iodide

710. 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. 15%

c. 1%

d. 10%

e. 5%

711. 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 beta<sub>2</sub>-adrenergic agonists

**e. Inhaled glucocorticosteroids**

712. A medical facility purchases antitumor drugs directly from a domestic manufacturer. What is the level of the sales channel used in this case?

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

**e. Zero-level channel**

713. 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. Dysfunctional conflict**

**b. Interpersonal conflict**

- c. Intergroup conflict
- d. Intrapersonal conflict
- e. Conflict between individual and group

714. What technology was used by a pharmacist to make a starch solution?

**a. Mixed it with cold water, then poured the mixture into boiling water and boiled for 1-2 minutes**

- b. Mixed it with hot water and added cold water
- 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

715. 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 20.00 to 9.00
- b. From 24.00 to 8.00
- c. From 22.00 to 6.00**
- d. From 23.00 to 7.00
- e. From 21.00 to 9.00

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

**a. Antibacterial agents**

**b. Sedatives**

- c. Diuretics
- d. Wound healing agents
- e. Laxatives

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

**a. Glycyrrhiza roots**

- b. *Panax ginseng* roots
- c. *Berberis* roots
- d. *Taraxacum* roots
- e. *Aralia mandshurica* roots

718. An analytical chemist determines potassium ions admixture in a medicinal substance with sodium tetrphenylborate according to the State Pharmacopoeia of Ukraine. What analytical effect would confirm the presence of this admixture?

**a. Brown coloring**

**b. White opalescence**

- c. Pink coloring
- d. Yellow coloring
- e. Blue coloring

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

- a. Metformin
- b. Metoclopramide
- c. Meloxicam
- d. Metoprolol
- e. Metronidazole

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

721. An alkaloid drug has the chemical name of 1,3,7-Trimethyl-3,7-dihydro-1H-purine-2,6-dione. Name this substance:

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

722. A pharmaceutical company produces a medicine under the brand name "Corglyconum". What herbal raw material is used in preparation of this drug?

- a. Buckthorn bark
- b. Plantain foliage
- c. Wormwood grass
- d. Lily-of-the-valley grass
- e. Dandelion roots

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

- a. -
- b. Financial and credit activity
- c. Commercial activity
- d. Manufacturing activity
- e. Financial activity

724. 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. Glibenclamide
- c. Urea
- d. Insulin
- e. Metformin

725. 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. Individual
- b. Received from a higher-level organization
- c. Personal
- d. Collegial
- e. -

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

- a. Cuts and abrasions
- b. Cold
- c. Diabetes mellitus

- d. Muscle pain
- e. Headache

727. 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 manufacturing factory
- c. Withdraw the medicines and send them for laboratory testing
- d. Withdraw the medicines and send them for disposal
- e. Withdraw the medicines and send them back to the supplier

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

- a. Nifedipine
- b. Lisinopril
- c. Hydrochlorothiazide

d. Atorvastatin

- e. Nitroglycerine

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

- a. Decreased blood pressure
- b. Increased effectiveness of antacids
- c. Increased blood pressure
- d. Increased risk of hepatotoxicity

e. Reduced effectiveness of iron preparations

730. 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. Quantity and vehicle of the suppositories
- b. Diameter and vehicle of the suppositories
- c. Diameter and quantity of the suppositories
- d. Length and quantity of the suppositories

e. Diameter, length, and quantity of the suppositories

731. 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. Riboxin (Inosine)
- b. Naphthyzin (Naphazoline)
- c. Panangin
- d. Metacycline

e. Nitroglycerine

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

- a.  $K_2CrO_4$
- b.  $K_2[HgI_4]$

c.  $FeCl_3$

- d.  $KMnO_4$

e.  $[NH_4]_2C_2O_4$

733. 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. Pepsin

- d. Starch

e. Pectin

734. 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. 30%
- b. 20%
- c. 10%
- d. 2%

e. 3%

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

- a. Absence of mechanical inclusions
- b. pH value
- c. Absence of heavy metals

d. Apyrogenicity

e. The way in which it was obtained

736. 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. Aminoglycosides

b. Fluoroquinolones

c. Penicillins

d. Cephalosporins

e. Macrolides

737. 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. At full cost

b. Free of charge

c. With 50% discount

d. With 30% discount

e. With 70% discount

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

a. Furfural

b. Resorcinol

c. Hydroxyquinoline

d. Benzaldehyde

e. Aniline

739. Specify the drugs recommended for prevention and correction of dysbiotic problems caused by antibiotic therapy:

a. Prokinetics

b. Uroseptics

c. Antacids

d. Cholagogues

e. Probiotics

740. 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. Final

c. Financial

d. Preliminary

e. Social

741. Based on the medical certificate, a patient can receive financial assistance due to temporary disability. Financial assistance for temporary disability **CANNOT** be provided:

a. In case of intentional self-harm

b. -

c. If sick leave is taken for child care

d. In case of disease (trauma)



e. If only sanatorium-and-spa treatment is required

742. During storage, suspension instability manifests itself as:

a. Sedimentation of particles

b. Flocculation of particles

c. Caking of particles

d. Dissolution of particles

e. Change of particles shape

743. 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 65%

b. At least 40%

c. At least 30%

d. At least 50%

e. At least 20%

744. 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. Imidazole ring

b. Lactonic ring

c. Methyl group

d. Chloride ions

e. Methylene group

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

a. Ammonium oxalate

b. Ammonium molybdate

c. Potassium chloride

d. Magnesium sulfate

e. Sodium nitrite

746. 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. Technological

b. Administrative

c. Socio-psychological

d. -

e. Economic

747. 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. Chondrotoxicity

b. Allergic response

c. Photosensitization

d. Nephrotoxicity

e. Dysbiosis

748. 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. Logbook of receipt of goods by group

b. Act on established discrepancy in quantity and quality

c. Contract of sale

d. Register of medicinal products received by the subject of economic activity

e. Product report

749. 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. Enfleurage**

- b. Extraction
- c. Dynamic sorption
- d. Hydrodistillation
- e. Compression

750. 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. Breakeven point**

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

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

**a. Sulfacil sodium**

**b. Norsulfazole**

- c. Soluble streptocide
- d. Streptocide
- e. Sulfadimezinum (Sulfadimine)

752. 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. Polymerization
- b. Coacervation
- c. Slurrying of the nuclei
- d. Pelleting

**e. Galvanization**

753. 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. Low solubility in water
- b. Poor solubility in water
- c. Thermal stability
- d. Volatility

**e. Thermolability**

754. 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. Increment**

**b. Basic pay**

- c. One-off payment
- d. Bonus
- e. Financial aid

755. 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. Infrared spectroscopy
- c. Refractometry
- d. Nuclear magnetic resonance spectroscopy

**e. Polarimetry**

756. 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. Line and staff**

**b. Line**

**c. Functional**

- d. Matrix
- e. Divisional

757. A pharmacy prepares an aqueous extract of thermopsis grass. What components should be used to prepare this aqueous extract?

- a. Thermopsis tincture, purified water
- b. Thermopsis grass, purified water
- c. Thermopsis grass, sodium chloride, purified water
- d. Thermopsis grass, sodium bicarbonate, purified water
- e. Thermopsis grass, hydrochloric acid solution 1:10, purified water

758. 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. Recruitment
- c. -
- d. Staff rotation
- e. Promotion

759. 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. Administrative
- d. Institutional
- e. Technical

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

761. 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, Arctostaphylos leaves
- b. Mint leaves, buckthorn bark
- c. Mint leaves, Althaea roots
- d. Mint leaves, flax seeds
- e. Mint leaves, chamomile flowers

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

- a. Ricini oleum
- b. Helianthi oleum
- c. Maydis oleum
- d. Lini oleum
- e. Cucurbitae oleum

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

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

764. 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. Steeping

**b. Percolation**

- c. Maceration
- d. Remaceration
- e. Turbo extraction

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

- a. -
- b. To keep a roster of incoming medicines
- c. To check the pharmacy stock for low-quality or fake medicines
- d. To draw up conclusions regarding inspection of incoming medicines

**e. To draw up orders for medicines and medical products, to conclude sales contracts**

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

- a. Salaries payment
- b. Debt settlement with the creditors
- c. Equity capital

**d. Monetary funds**

- e. Bank loans

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

**a. Novocaine**

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

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

- a. Ester bond
- b. Diethylamino group
- c. Residue of n-aminobenzoic acid

**d. Bound hydrochloric acid**

- e. Unsubstituted aromatic cycle

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

- a. Thiamazole

**b. Metamizole sodium**

- c. Metronidazole
- d. Bendazol
- e. Piracetam

770. A pharmaceutical factory produces tablets of sodium chloride. What is the method of their production?

- a. Direct compression with the addition of excipients
- b. Moulding
- c. Wet granulation prior to compression

**d. Direct compression without additional substances**

- e. Dry granulation prior to compression

771. 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. Stabilizers

**b. Plasticizers**

- c. Thickeners
- d. Pigments
- e. Preservatives

772. 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 high-frequency and microwave frequency current
- c. Triple heating of solution to 40-60°C with 24-hour-long intervals in between for thermostating
- d. Sterilization with flowing steam at 100°C
- e. Sterilization with dry heat at 180-200°C for a lengthy period of time

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

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

774. 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. Profit turnover of goods
- b. Turnover of goods cost price of products
- c. Cost price of products liquidity
- d. Liquidity solvency
- e. Turnover of goods wages

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

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

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

- a. Riboflavin powder should be sifted in advance
- b. Mix the components in the descending order based on their amount

c. "Three layers" method

- d. Mix the components in the ascending order based on their amount
- e. Riboflavin should be added on the top of the prepared mixture of other ingredients

777. A medicinal plant contains hydroxycoumarins and is used in production of venotonic agents. Name the herbal raw material harvested from this plant:

- a. Fructus Dauci carotae
- b. Fructus Pastinacae sativae

c. Semina Hippocastani

- d. Fructus Ammi majoris
- e. Herba Meliloti

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

- a. Resuspension
- b. Boiling point
- c. Dry residue

d. Dissolution time

- e. Mechanical strength

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

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

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

- a. Phenothiazine
- b. Benzimidazole**
- c. Purine
- d. Acridine
- e. Indole

781. Codeine is used as a cough-depressant. What herbal raw material contains this alkaloid?

- a. Grass of plume poppy
- b. Grass of common periwinkle
- c. Pods of opium poppy**
- d. Celandine grass
- e. Tea leaves

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

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

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

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

- a. Sublingual administration
- b. Rectal administration
- c. Preparation of solutions for injections
- d. Implantation
- e. Preparation of solutions for various pharmaceutical purposes**

785. 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. Sunflower oil
- b. Flaxseed oil
- c. Castor oil**
- d. Cocoa butter
- e. Olive oil

786. 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. Cash receipt order**
- c. Goods report (Inventory change report)
- d. Financial operating report of the pharmacy
- e. Goods received record book by groups of goods

787. 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. Production improvement
- b. Intensification of commercial efforts

**c. Socio-ethical marketing**

d. Marketing

e. Product improvement

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

a. Nightshift

**b. Overtime**

c. Regular hours

d. Dayshift

e. Extended time

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

a. Reduction

b. Differentiation

**c. Product modification**

d. Modernization

e. Diversification

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

**a. Certain value of the solution pH**

b. Slight heating

c. Intense heating

d. Preliminary processing of raw materials for their saturation with 96% alcohol

e. Herbal raw material should be fresh

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

a. After concentrated solutions

b. After solid medicinal substances are dissolved

**c. First**

d. Last, because of its essential oil content

e. Before ethanol-containing liquids are added

792. A pharmaceutical company uses various methods of advertising. What method of advertising foresees its distribution to everyone, not just the target audience?

a. Postal cards and pamphlets

b. Advertising souvenirs

c. -

**d. Out-of-home advertising**

e. Professional-targeted advertising

793. 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. Verapamil

d. Amlodipine

e. Nitroglycerin

794. 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 70% alcohol in 1:10 proportion

c. With 70% alcohol in 1:5 proportion

d. With 48% alcohol in 1:2 proportion

**e. With 90% alcohol in 1:20 proportion**

795. 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. 2.4 g

- b. 1.9 g
- c. 3.9 g
- d. 2.9 g
- e. 1.4 g

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

- a. Ademethionine
- b. Magnesium sulfate
- c. Silybum dry extract
- d. Cynara dry extract

e. Ursodeoxycholic acid

797. 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. Thin layer chromatography
- b. Adsorption chromatography
- c. Gas chromatography

d. Ion-exchange chromatography

e. Paper chromatography

798. 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. Soluble tablets
- b. Chewable tablets
- c. Effervescent tablets
- d. Dispersible tablets

e. Modified-release tablets

799. 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. Naming and mentioning celebrities, movie and cartoon characters, competent authorities

c. Warning that self-medication can be harmful to health

- d. Comparison with other medical products
- e. References to the cases of successful drug use

800. 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. Impairment of coronary circulation
- b. Myocardial infarction
- c. Progressing coronary atherosclerosis
- d. Progressing ischemic heart disease

e. Development of nitrate tolerance

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

- a. They are not durable enough
- b. To speed up the process of applying the coating
- c. To improve their appearance
- d. To avoid prolonged contact with overlaying suspension

e. To prevent them from adhesion to each other

802. 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 dynamics
- b. Job rotation
- c. Personnel certification

d. Staff turnover

e. Staff motivation



803. 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. 2 ml
- b. 10 ml
- c. 1 ml
- d. 5 ml**
- e. 0,5 ml

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

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

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

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

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

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

807. At the end of each month a pharmacy accountant draws up a balance. What indicator characterizes liabilities of a pharmaceutical company?

- a. Work-in-process inventory
- b. Equity capital**
- c. Circulating assets
- d. Reserves and expenses
- e. Accounts receivable

808. 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. Allergic response
- b. Idiosyncrasy**
- c. Drug dependence
- d. Withdrawal syndrome
- e. Dysbiosis

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

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

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

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

- d. 1/40 of the percolator's volume per hour
- e. 1/10 of the percolator's volume per 20 minutes

811. 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. 200 mg
- c. 400 mg
- d. 500 mg
- e. 300 mg

812. 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. *Digitalis purpurea* folium
- b. *Hyoscyamus niger* folium
- c. *Gnaphalium uliginosum* herba

d. *Althaea officinalis* herba

- e. *Urtica dioica* folium

813. *Althaea officinalis* roots require special conditions for infusion. What special technique must be used for infusion of this herbal raw material?

- a. The presence of sodium bicarbonate
- b. The presence of ascorbic acid
- c. The presence of hydrochloric acid
- d. Immediate filtration

e. Cold infusion

814. 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. Silver nitrate
- b. Sodium carbonate
- c. Ammonium oxalate

d. Sodium nitrite

- e. Barium chloride

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

- a. *Hyoscyamus niger*
- b. *Atropa belladonna*
- c. *Berberis vulgaris*

d. *Chelidonium majus*

- e. *Papaver somniferum*

816. 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. *Capsella bursa-pastoris*

b. *Plantago major*

- c. *Rosa canina*
- d. *Althaea officinalis*
- e. *Urtica dioica*

817. 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. Mucolytics

c. Cardiac glycosides

- d. Inhaled glucocorticoids
- e. Nonsteroidal anti-inflammatory drugs

818. 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. Permanent quadrat method
- b. Model sample method
- c. Visually

d. Projective cover method

- e. Geodesically

819. 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. Bromatometry

b. Acidimetry

- c. Complexometry

- d. Nitritometry

- e. Iodometry

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

- a. Fabaceae

- b. Asteraceae

- c. Papaveraceae

d. Solanaceae

- e. Apocynaceae

821. Clonidine hydrochloride is a salt of an organic base. What method is used for the quantification of this medicinal substance?

a. Alkalimetry

- b. Bromatometry

- c. Nitritometry

- d. Iodometry

- e. Complexonometry

822. *Achillea* grass is harvested during a certain stage of plant growth. Name this stage:

- a. Before the flowering

- b. During the shoot growth

- c. During the fruiting

- d. During the budding

e. During mass flowering

823. 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. Potassium iodide

- d. Potassium fluoride

- e. Sodium fluoride

824. 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. Nimesulide

- b. Diclofenac sodium

- c. Methylprednisolone

- d. Prednisolone

e. Methotrexate

825. 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. Vertical rotation

- c. Diagonal rotation

- d. Employee turnover

e. Mixed rotation

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

a. Solvent

**b. Plasticizer**

c. Emollient

d. Solubilizer

e. Preservative

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

a. Euphyllin (Aminophylline)

**b. Prednisolone**

c. Fexofenadine

d. Loratadine

e. Dibazol (Bendazol)

828. 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. 17**

b. 36

c. 41

d. 40

e. 38

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

a. 15.0

b. 18.0

**c. 6.0**

d. 2.0

e. 10.0

830. 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. Prednisolone

d. Zopiclone

**e. Tramadol**

831. 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. Delegation of authority**

c. Reduction of authority

d. Withdrawal of authority

e. Dissolution of authority

832. 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. 2 years

b. 6 months

c. 3 months

d. 5 years

**e. 3 years**

833. Considering thermolability of most animal-derived injection preparations, they are sterilized by means of:

a. In autoclave chamber with high-pressure saturated steam

b. High frequency current

c. Filtration through membrane

d. Ultrasound

e. Addition of buffer solutions

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

a. Co-trimoxazole

b. Gentamicin

c. Amoxicillin

d. Norfloxacin

e. Ofloxacin

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

a. Oleum Sojae

b. Oleum Lini

c. Oleum Cucurbitae

d. Oleum Amygdalarum

e. Oleum Ricini

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

a. 24 hours

b. 30 hours

c. 32 hours

d. 45 hours

e. 36 hours

837. 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. 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"

b. Draw up a Quality Assessment Report with the defects listed and allow sale of the drug shipment

c. Dispose of the shipment that contains questionable drugs

d. Return the shipment to the manufacturer

e. Allow sale of the drug shipment

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

a. Sodium bicarbonate

b. Sodium hydroxide

c. Ascorbic acid

d. Hydrochloric acid

e. Sodium metabisulfite

839. 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. Saponins

c. Tannins

d. Coumarins

e. Anthracene derivatives

840. Mandatory payroll deductions are withheld from the salary of pharmacy workers. Specify the tax rate on income of natural persons:

a. 15%

b. 5%

c. 18%

d. 20%

e. 0%

841. A 53-year-old woman suffers from ischemic heart disease and angina pectoris. What drug can be used to stop angina pectoris attacks?

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

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

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

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

844. 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. Request
- b. Offer
- c. Complaint
- d. Contract
- e. Statement

845. 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. External
- b. Vertical
- c. Horizontal
- d. Internal
- e. Interlevel

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

- a. Methyl orange
- b. Naphtholbenzein
- c. Ferroin
- d. Methyl red
- e. Crystal violet

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

- a. Folia Digitalis lanata
- b. Herba Bursae pastoris
- c. Folia Cotini coggygriae
- d. Folia Urticae
- e. Folia Vitis idaeae

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

- a. Tannins
- b. Glycosides

- c. Carbohydrates
- d. Lipids
- e. Iridoids

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

- a. Potassium bromide
- b. Iron(II) sulfate
- c. Potassium ferrocyanide

- d. Calcium chloride
- e. Sodium hydroxide

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

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

- e. Whenever a new employee joins the team

851. 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. Sanguisorba officinalis
- b. Dryopteris filix-mas

c. Rubia tinctorum

- d. Valeriana officinalis
- e. Rhodiola rosea

852. A pharmacist prepares a compound powder. What medicinal substance must be comminuted without adding an adjuvant liquid (alcohol or ether)?

- a. Thymol
- b. Streptocide (Sulfanilamide)

c. Zinc oxide

- d. Camphor
- e. Menthol

853. 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. Migraine attack
- b. Exertional angina pectoris attack
- c. Cervical osteochondrosis

d. Hypertensive crisis

- e. Acute conjunctivitis

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

- a. Acetic acid
- b. Sulfuric acid
- c. Tartaric acid
- d. Benzoic acid

e. Chromotropic acid

855. 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 nitrate
- e. Sodium chloride

856. Polyethylene oxide base belongs to the following group:

- a. Emulsion

**b. Hydrophilic**

- c. Fat
- d. Amphiphilic
- e. Hydrophobic

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

- a. Eye sprays
- b. Eye ointments

**c. Eye lotions**

- d. Eye drops
- e. Eye inserts

858. 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. Generation of the ideas

**b. Economic analysis**

- c. Filtration of the ideas
- d. Commercial manufacturing
- e. Test marketing

859. 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. SWOT analysis**

- b. VEN analysis
- c. ABC analysis
- d. XYZ analysis
- e. Meta-analysis

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

**a. Current**

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

861. 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. Psychographic
- b. Behavioral
- c. Geographical

**d. Demographic**

- e. Social and economic

862. 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. Fruiting
- b. Flowering
- c. Dormancy

**d. Sap flow**

- e. Defoliation

863. "Balance" accounting form consists of two parts - assets and liabilities. Select from the list only the liabilities.

- a. Retained earnings, intangible assets



- b. Accounts receivable, prepaid expenses
- c. Authorized capital, fixed assets

**d. Bank loan, accounts payable**

- e. Fixed assets, accounts receivable

864. 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. Indefinitely

**b. 5 years**

- c. 3 years
- d. 1 years
- e. 2 years

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

- a. Hypertension
- b. Hypotension

**c. Bradycardia**

- d. Constipation
- e. Hypokalemia

866. 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. Xanthine cycle
- b. Naphthalene cycle
- c. Pyridine cycle

**d. Steroid cycle**

- e. Imidazole cycle

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

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

**e. Sodium chloride**

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

- a. Width of distribution channel
- b. -
- c. Volume of distribution channel

**d. Length of distribution channel**

- e. Level of distribution channel

869. 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. 50% of the average salary
- b. 70% of the average salary
- c. 100% of the average salary**

- d. 60% of the average salary
- e. 80% of the average salary

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

- a. Persicaria hydropiper grass
- b. Nettle leaves
- c. Rose hips

**d. Cotinus coggygria leaves**

- e. Solidago canadensis grass

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

**a. Thioglycosides**

- b. Polysaccharides
- c. Flavonoids
- d. Fatty oil
- e. Alkaloids

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

**a. National Health Service of Ukraine**

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

873. *Sanguisorba officinalis* herbal raw material contains tannins. What method must be used to determine their content according to the State Pharmacopoeia of Ukraine?

- a. Photoelectrocolorimetry
- b. Chromatography

**c. Permanganatometry**

- d. Spectrophotometry
- e. Nephelometry

874. 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. Leaves**

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

875. 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. Glucose**

**b. Pectin**

- c. Sucrose
- d. Fructose
- e. Starch

876. 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. Psychosocial
- b. Economic
- c. Legal
- d. Simulation

**e. Organizational**

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

**a. Standard set of sieves**

- b. Friabilators
- c. Various vibrosieves
- d. Microscope
- e. Laboratory identifiers

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

**a. Leaves and fruits**

**b. Roots and leaves**

- c. Roots and fruits
- d. Leaves and seeds
- e. Leaves and flowers

879. 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. Cash flow register
- c. Accounts ledger
- d. Inventory**

e. Commodity report

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

**a. Competition-based pricing**

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

881. What is the name of the ability to restore the properties of a heterogenous system by perturbation?

- a. Dispersion
- b. Granulation
- c. Extraction

**d. Resuspension**

e. Emulsification

882. 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. Potassium aspartate and magnesium aspartate**

- b. Hydrochlorothiazide
- c. Calcium gluconate
- d. Euphyllin (Aminophylline)
- e. Calcium chloride

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

a. Ibuprofen

**b. Metamizole sodium**

- c. Nimesulide
- d. Indomethacin
- e. Acetylsalicylic acid

884. 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. Intensification of commercial effort
- b. Sales improvement

**c. Product improvement**

- d. Socioethical marketing
- e. Manufacture improvement

885. Name the optimal vehicle for soluble vaginal suppositories:

- a. Fat
- b. Cocoa butter
- c. Hard fat
- d. Glycerine

**e. Polyethylene oxide**

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

- a. Choosing a strategy
- b. Evaluation and analysis of the external environment

**c. Strategy evaluation**

d. Formulation of the mission

e. Implementation of the strategic plan

887. 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 fluidized bed

c. Wet granulation in vertical granulators

d. Granulation in spray dryers

e. Granulation in the dragee pan

888. 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 the prepared emulsion

c. Dissolution in water to prepare the primary emulsion

d. Dissolution in oil

e. Comminution with the water intended for the dilution of the primary emulsion

889. 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. Intrapersonal

b. -

c. Individual vs. group

d. Interorganizational

e. Intergroup

890. 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. Decline

b. Saturation

c. Maturity

d. Growth

e. Introduction

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

a. Payroll

b. Employee time sheet

c. Work schedule

d. Material aid log book

e. Medical certificate

892. A pharmaceutical company produces liquid dosage forms. What principle is used in rotary pulsation apparatus to obtain an emulsion?

a. Mechanical dispersion

b. Solubilization

c. Ultrasonic dispersion

d. Coacervation

e. Maceration

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

a. Ammonium oxalate solution

b. Magnesium sulfate solution

c. Barium chloride solution

d. Potassium pyroantimonate solution

e. Sodium nitrite solution

894. 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. Payment order

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

895. 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. Legal
- b. Technological
- c. Social

**d. Economic**

- e. Medical

896. 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. Rifampicin
- b. Streptomycin
- c. Tetracycline

**d. Amoxicillin**

- e. Biseptol (Co-trimoxazole)

897. 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. Tartaric acid solution**
- b. Benzoic acid solution
- c. Nitric acid solution
- d. Acetic acid solution
- e. Hydrochloric acid solution

898. Erythromycin belongs to the following type of antibiotics based on its chemical structure:

- a. Polyene antibiotics
- b. Polypeptides
- c. Aromatic antibiotics

**d. Macrolides**

- e. beta-lactams

899. 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. Calcitonin
- b. Ribavirin
- c. Riboflavin

**d. Piperazine**

- e. Pyrazinamide

900. What adjuvants are added to a tablet mass to promote its breakup?

**a. Disintegrants**

- b. Lubricants
- c. Fillers
- d. Antioxidants
- e. Thickeners

901. 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. Sodium benzylpenicillin
- b. Streptomycin sulfate

**c. Levomycetin (Chloramphenicol)**

- d. Biomycin
- e. Erythromycin

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

- a. Ceftriaxone
- b. Lincomycin

c. Clarithromycin

d. Levomycetin (Chloramphenicol)

e. Co-trimoxazole

903. 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. Functional

b. Segment-oriented

c. Market-oriented

d. Product-oriented

e. Regional

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

a. Mint water

b. Freshly prepared purified water

c. Ethyl alcohol

d. Water for injections

e. Demineralized water

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

a. By their Anatomical Therapeutic Chemical Classification

b. By their pharmacotherapy group

c. By their application

d. On separate shelves and in separate shopwindows

e. Alongside medicines

906. 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. McGregor's Theory X and Theory Y

b. Vroom's expectancy theory

c. Maslow's hierarchy of needs

d. McClelland's theory of needs

e. Herzberg's two-factor theory

907. 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. Callus treatment bandage

b. Adhesive bandage

c. Bactericidal adhesive bandage

d. Pepper plaster bandage

e. Simple lead bandage

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

a. Amikacin

b. Levofloxacin

c. Fluconazole

d. Metronidazole

e. Acyclovir

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

a. Light-resistant neutral glass "CHC-1"

b. Alkaline glass "AB-1"

c. Neutral glass "HC-2A"

d. Neutral glass "HC-2"

e. Borosilicate neutral glass "YCP -1"

910. Adonis-derived drugs are popular cardiogenic agents. The stock of adonis herbal raw material is assessed by the method of:

- a. Model specimen
- b. Geodesic
- c. By eye
- d. Projective cover
- e. Permanent quadrates**

911. 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. Soap-glycerine base
- d. Vaseline**
- e. Lanolin

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

- a. Zinc oxide
- b. Xeroform (bismuth tribromphenolate and bismuth oxide complex)**
- c. Ascorbic acid
- d. Magnesium oxide
- e. Glucose

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

- a. -
- b. Raoult's law**
- c. Clapeyron-Mendeleev equation
- d. Boyle-Mariotte law
- e. Dalton's law

914. 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. Chloramphenicol
- d. Oxacillin
- e. Cefazolin

915. 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. Sulfanilic acid
- c. Anhydrous acetic acid**
- d. Dimethyl formamide
- e. Concentrated sulfuric acid

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

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

917. 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. Ibuprofen
- c. Paracetamol

- d. Celecoxib
- e. Metamizole sodium

918. 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. Franchise
- b. Licensing
- c. Joint venture
- d. Direct investments

e. Export

919. What substance is most often used as a vehicle in triturations?

a. Lactose

- b. Glucose
- c. Talcum
- d. Starch
- e. Sucrose

920. To improve iodine solubility in the purified water, iodine must be:

a. Dissolved in the saturated solution of potassium iodide

- b. Dispersed with glycerine
- c. Reduced to fine powder
- d. Dissolved in the boiling water
- e. Comminuted with alcohol

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

a. Flowing steam

b. Not subject to sterilization

- c. Hot air
- d. Steam under pressure
- e. Ultraviolet radiation

922. A pharmaceutical factory produces juices from fresh herbal raw materials. What technological operation is performed at the stage of juice purification?

a. Heating followed by rapid cooling

- b. Crystallization
- c. Filtration
- d. Sedimentation
- e. Adsorption

923. 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. Bisoprolol
- c. Drotaverine

d. Nitroglycerin

e. Diclofenac sodium

924. Polemonium caeruleum rhizomes with roots are a source material for making expectorants. What group of substances causes this effect?

a. Flavonoids

b. Saponins

- c. Tannins
- d. Anthraquinones
- e. Vitamins

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



e. Precipitation

926. 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. Aluminium-containing drugs

b. Ranitidine

c. Simethicone

d. Calcium carbonate

e. Magnesium-containing drugs

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

a. Pilocarpine hydrochloride

b. Nitrofurantoin

c. Phenazone

d. Nicotinic acid

e. Thiamine bromide

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

a. -

b. Commercial activity

c. Social responsibility

d. Manufacturing activity

e. Financial activity

929. What stabilizer is used to stabilize ascorbic acid solutions for injections?

a. Sodium bicarbonate with sodium sulfite

b. Sodium thiosulfate

c. Weibel stabilizer

d. 0.1 M hydrochloric acid solution

e. 0.1 M sodium hydroxide solution

930. A pharmacist prepares suppositories by pouring. Name the coefficient for substitution of fatty vehicle with glycerinated gelatin vehicle:

a. 1.20

b. 1.25

c. 1.21

d. 1.11

e. 1.31

931. A pharmacist has prepared an oak bark decoction. What is the ratio of the herbal raw material to extractant?

a. 1:30

b. 1:400

c. 1:5

d. 1:10

e. 1:20

932. 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. Saponins

c. Polysaccharides

d. Essential oils

e. Phenolic glycosides

933. 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. Vicasol (Menadione)

b. Acetylsalicylic acid

c. Clopidogrel

d. Streptokinase

**e. Protamine sulfate**

934. A medical facility located in Kyiv buys its diagnostic tools from a domestic manufacturer. What level of distribution channel is it?

a. Two-level channel

**b. Zero-level channel**

c. Three-level channel

d. Four-level channel

e. One-level channel

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

**a. Dry heat**

b. Pasteurization

c. Ultraviolet irradiation

d. Membrane filtration

e. Flowing steam

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

**a. 30 minutes at room temperature**

b. 30 minutes of water bath infusion and 10 minutes of cooling at room temperature

c. 15 minutes of water bath infusion and 45 minutes of cooling at room temperature

d. 30 minutes of water bath infusion and immediate filtering without cooling

e. 60 minutes at room temperature

937. 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. Hypokalemia**

b. Hypernatremia

c. Hypermagnesemia

d. Hyperkalemia

e. Hypocalcemia

938. 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. White precipitate**

b. Yellow precipitate

c. Light green precipitate

d. Black precipitate

e. Blue precipitate

939. 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. 4.0-7.0

c. 5.0-8.0

**d. 1.0-4.0**

e. 3.0-6.0

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

a. In the order of decreasing alcohol concentration

**b. In the order of increasing alcohol concentration**

c. In any order

d. First into the vial for dispensing

e. In the order of increasing volume of alcohol-containing solutions

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

**a. Hygienic and motivational factors**

b. The need for power, success, and affiliation

- c. The need for existence, connection, growth
- d. The need for protection
- e. The need for safety

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

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

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

944. An analytical chemist can quantitatively determine the thiamine bromide content in powders by means of:

- a. Nitritometric titration
- b. Alkalimetry
- c. Permanganatometry
- d. Complexometric titration
- e. Bromometry

945. 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. 60 mL
- b. 30 mL
- c. 7.5 mL
- d. 90 mL
- e. 120 mL

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

- a. A company, the members of which bear the liability for the company's debts within the amount of their contributions
- b. A company, the members of which bear additional solidary liability for the company's obligations with all their property
- c. 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
- d. A company, the members of which bear full liability
- e. 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

947. 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 sodium hydroxide
- c. Weibel stabilizer
- d. 0.1 M solution of hydrochloric acid
- e. Sodium sulfite

948. 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. Quinuclidine derivatives
- c. Isoquinoline derivatives

d. Tropane derivatives

- e. Indole derivatives

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

- a. Common iridoids
- b. Secoiridoids

c. Valepotriates

- d. Cyclopentane iridoids
- e. Complex iridoid alkaloids

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

- a. Fructus Viburni
- b. Fructus Sorbi

c. Fructus Aroniae melanocarpae

- d. Fructus Sambuci nigrae
- e. Fructus Crataegi

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

- a. Acidated with hydrochloric acid
- b. Infused cold
- c. Filtered without wringing of the solid residue

d. Prepared in a tightly closed vessel

- e. Immediately filtered

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

- a. Antifriction materials

b. Leaveners

- c. Solvents
- d. Film formers
- e. Thickeners

953. 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. Authoritarian

- b. Direct
- c. Liberal
- d. Democratic
- e. Collective

954. 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. Profit

b. Markups

- c. Expenses
- d. Profitability
- e. Commodity circulation

955. 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. 10.0 g and 120 mL

- b. 5.0 g and 110 mL
- c. 20.0 g and 140 mL

- d. 10.0 g and 100 mL
- e. 0.25 g and 100 mL

956. 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. Integrated method
- b. -

c. Selective method

- d. Mass sales method
- e. Intensive method

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

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

a. Pressing

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

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

- a. Isoalloxazine
- b. Corrin

c. Pteridine

- d. Phenothiazine
- e. Purine

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

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

e. In the boiling water in the presence of sodium chloride

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

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

e. Aromatic amino acid esters

962. What topical antiviral agent should be recommended to the patient with herpetic lesions on the lips?

- a. Anaferon

b. Acyclovir

- c. Aflubin
- d. Amizon (Enisamium iodide)
- e. Arbidol (Umifenovir)

963. 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. Dealer
- b. Agent
- c. Broker
- d. Consignee
- e. Commission agent

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

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

965. 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. Referent
- b. Centralized
- c. Mixed
- d. Decentralized
- e. Specialized

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

967. 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. Centralized
- b. Referent
- c. Mixed
- d. Decentralized
- e. -

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

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

969. When activated charcoal is included into the combined therapy, the sorption of other medicines:

- a. Accelerates
- b. Activates
- c. Decreases
- d. Remains unchanged
- e. Increases

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

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

e. Nitritometry

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

- a. Suspensions
- b. Infusions
- c. Ophthalmic dosage forms
- d. Emulsions

e. Dosage forms for newborns

972. What pharmacological group of drugs **CANNOT** be combined with expectorants?

a. Antitussive drugs

- b. Antibacterial drugs
- c. Mucolytic agents
- d. Polyvitamins
- e. Decongestants

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

a. Imidazole

- b. Thiazole
- c. Furan
- d. Pyrrole
- e. Pyrazole

974. 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. Panel
- b. Observation

c. Survey

- d. Experiment
- e. Testing

975. 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. Herbal raw materials
- b. Packaging

c. Buildings

- d. Monetary funds
- e. Goods

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

- a. Enalapril
- b. Bisoprolol
- c. Losartan

d. Methyldopa

e. Reserpine

977. 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. Synthetic penicillins
- b. Natural penicillins
- c. Macrolides
- d. Combined penicillins

e. Aminoglycosides

978. 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. Inhibition of platelet adhesion and aggregation

**b. Inhibition of prostaglandin synthesis in the mucosa**

c. Inhibition of neutrophil aggregation

d. Inhibition of lipid peroxidation

e. Disturbed pain impulse conduction

979. 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

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

a. 0.5

**b. 0.05**

c. 0.025

d. 5.0

e. 0.25

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

a. Supplier pharmacist

b. Pharmacy head manager

c. Dispensing chemist

**d. Authorized representative**

e. Analyst

982. 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. Quantitative determination

b. pH

**c. Sterility**

d. Identification

e. Microbiological purity

983. What medicine would be most advisable for symptomatic treatment of constipation in pregnant women?

a. Senadexine (sennosides A and B)

b. Ononis herbal medicine

**c. Lactulose**

d. Bisacodyl

e. Macrogol

984. 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. Caffeine**

b. Codeine

c. Papaverine

d. Atropine

e. Morphine

985. A powder with a hard to disintegrate substance has been made in a pharmacy. Specify this substance:

a. Sodium chlorides

b. Talcum

c. Osarsolum (Acetarsol)

**d. Camphor**

e. Sugar

986. 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. Benzylpenicillin (Penicillin G)

**b. Isoniazid**

c. Metronidazole

d. Acyclovir

e. Doxycycline hydrochloride

987. 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. Diversification**

b. Survival

c. Stability

d. Modernization

e. -

988. 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. Integration

**b. Diversification**

c. Intensification

d. Modernization

e. Conglomeration

989. 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. Customer preferences

b. Demand for the product

**c. Manufacturing costs**

d. Middleman markup

e. Pricing policy of the competitors

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

a. Lanolin: vaseline - 1:1

b. 40 parts of anhydrous lanolin - 60 parts of vaseline For Eye Ointments

c. Vaseline For Eye Ointments

d. 30 parts of lanolin - 70 parts of vaseline

**e. 10 parts of anhydrous lanolin - 90 parts of vaseline For Eye Ointments**

991. 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. Substandard drugs

b. Drugs subject to strict accounting in a special inventory log

**c. Essential drugs**

d. Over-the-counter drugs

e. Precursors

992. The head manager of a pharmacy has transferred to the deputy head manager the authority to select the range of products for sale and make decisions about the nomenclature and amount of medicines and medical products to be purchased from suppliers and the terms of such purchase contracts. What is this action called in the management theory?

a. Planning

**b. Delegation**

c. Organization

d. Motivation

e. Control

993. 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. Cardiac glycosides

**b. Alkaloids**

c. Thioglycosides

- d. Fatty oils
- e. Steroidal saponins

994. 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. Sulfamethoxazole
- b. Tyrosine**
- c. Nitrofurantoin
- d. Retinol acetate
- e. Resorcinol

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

- a. Benzoic acid
- b. Salicylic acid
- c. Glutaminic acid
- d. Boric acid**
- e. Acetylsalicylic acid

996. What medicinal substance has benzimidazole in its structure?

- a. Diphenhydramine hydrochloride (Dimedrol)
- b. Mercaptoimidazole (Thiamazole)
- c. Nitrofurantoin (Furacilin)
- d. Dibazol (Bendazol)**
- e. Metamizole sodium salt (Analgin)

997. 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. Bureaucratic
- b. Divisional**
- c. Decentralized
- d. Centralized
- e. Functional

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

- a. 5 000 000 UAH
- b. 500 000 UAH**
- c. 100 000 UAH
- d. 750 000 UAH
- e. 3 000 000 UAH

999. Pharmacy premises can be divided into service rooms and workrooms. Name the workroom for storage of medical products:

- a. Aseptic block
- b. Distillation room
- c. Material storage room**
- d. Shop floor
- e. Washing room

1000. 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. Photocolorimetry
- c. Bromatometry**
- d. Alkalimetry
- e. Nitritometry after alkaline hydrolysis

1001. What document must be prepared by a pharmacy's cashier for the cash collection?

- a. Cash deposit slip
- b. Cashier's check
- c. Cash book
- d. Payment order

**e. Accompanying statement**

1002. 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. Issuing cash sums to be accounted for

**c. Revenue of the pharmacy**

- d. Advance salary payments
- e. Transfer of the revenue to the bank account

1003. The process of rectification is used to make ethyl alcohol. This process is based on the following principle:

- a. Deep vacuum distillation
- b. Distillation with inert gases

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

- d. Technology of obtaining liquid extracts
- e. Rinsing of exhausted raw material with 3-5 times the amount of ethanol

1004. 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. Glucose solution
- b. Novocaine (procaine) solution
- c. Diprazine (promethazine) solution

**d. Hexamethylenetetramine solution**

- e. Aminazine solution

1005. 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. Refractive index
- b. Solution pH

**c. Optical density**

- d. Angle of rotation
- e. Viscosity

1006. A patient, who has been taking acetylsalicylic acid, developed hemorrhages of mucous membranes. This phenomenon is associated with:

- a. Increased absorption in the gastrointestinal tract
- b. Disorder of protein binding
- c. Decreased absorption in the gastrointestinal tract
- d. Changed volume of distribution

**e. Inhibition of the prothrombin synthesis**

1007. 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. Dimethyl formamide**

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

1008. Name the drug of choice for treatment of arterial hypertension during pregnancy:

- a. Furosemide
- b. Captopril

**c. Alpha-methyldopa**

- d. Sodium nitroprusside
- e. Propranolol

1009. 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. Hydroxyquinoline

**b. Methyl isothiocyanate**

- c. Acridine
- d. Furfural
- e. Naphthoquinone

1010. 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. Panel research
- b. Field research

**c. Theoretical research**

- d. Survey
- e. Observation

1011. 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. Urticae folia
- c. Uvae ursi folia
- d. Filicis maris rhizomata
- e. Rhodiolae roseae rhizomata et radices

1012. 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 infusion apparatus
- b. Concentrated solution was added into the prepared extract
- c. Sodium bromide was dissolved in the tincture in a vial for dispensing

**d. Dry substance was dissolved in the filtered extract in a stand**

- e. Sodium bromide was mixed in a separate vessel with a part of the extract, then this mixture was added into the prepared tincture

1013. 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. Income statement
- b. Balance sheet

**c. Auditor's conclusion**

- d. Cash flow statement
- e. Statement of changes in equity

1014. What substance is a component of the powders enclosed in gelatin capsules?

- a. Magnesium oxide
- b. Streptocide (Sulfanilamide)

**c. Ethacridine lactate**

- d. Dimedrol (Diphenhydramine)
- e. Glucose

1015. Inulin improves digestion and has a positive effect on carbohydrate metabolism. What plant is used as a source of inulin?

**a. Helianthus tuberosus**

- b. Hypericum maculatum
- c. Althaea officinalis
- d. Brassica juncea
- e. Astragalus dasyanthus

1016. The amount of temporary disability benefits to be paid is calculated taking into account the insured record of service of an employee. What percentage of temporary disability benefits will be paid to an employee with a disability certificate and more than 8-year-long insured record of service?

**a. 100% of salary**

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

1017. 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. Full material liability contract

b. Credit contract

c. License

d. Balance sheet

e. Auditor's conclusion

1018. 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. Adaptive

b. Collegial

c. Intuitive

d. Rational

e. Collective

1019. 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. 32 000 UAH

b. 90 000 UAH

c. 62 000 UAH

d. 2 000 UAH

e. 60 000 UAH

1020. 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. Formation of chelate complexes that cannot be assimilated into the body

b. Prolonged action of iron preparations

c. Increased activity of iron preparations

d. Accelerated clearance of iron preparations

e. Accelerated absorption of iron preparations

1021. 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. Standardization of herbal raw material

b. Packing of herbal raw material

c. Sorting of herbal raw material

d. Harvesting of herbal raw material

e. Marking of herbal raw material

1022. 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. Barium chloride

b. Ammonium oxalate

c. Sodium sulfide

d. Magnesium sulfate

e. Silver nitrate

1023. What reagent can confirm that alanine is an alpha-amino acid?

a. Sulfuric acid solution

b. Sulfosalicylic acid solution

c. Saturated sodium bicarbonate solution

d. Ninhydrin solution

e. Barium hydroxide solution

1024. 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. Prolongation of the effect of iron preparations

b. Increased activity of the drug

c. Faster absorption of the drug

d. Formation of poorly soluble chelate complexes

e. Accelerated elimination of the drug

1025. Nicotinamide is a pyridine derivative, which can be identified by its positive reaction with:

a. Thioglycolic acid solution

b. Copper-tartrate solution

c. Grade reagent

d. Thioacetamide reagent

e. Cyanogen bromide reagent

1026. 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. Psychological dependence

e. Sensitization

1027. 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. Affix the <<Invalid prescription>> stamp to the prescription and return it to the patient

b. Give the patient a copy of the prescription

c. Sell this medicine to the patient

d. Register the prescription in the log book and sell this medicine to the patient

e. Notify the head manager of the pharmacy

1028. Birch buds are used as a diuretic. Quality of the herbal raw material is determined by its content of:

a. Lipids

b. Essential oil

c. Saponins

d. Iridoids

e. Vitamins

1029. 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. Nitrous oxide

b. Tramadol

c. Zopiklon

d. Atropine sulfate

e. Tetracaine

1030. 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. Nitritometric titration

b. Bromometry

c. Alkalimetry

d. Acidimetry

e. Complexometric titration

1031. 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. Calcium chloride

c. Ammonium hydroxide

d. Sodium carbonate

e. Sodium nitrite

1032. What pharmaceutical factor can affect therapeutic activity of active substances?

- a. Material expenses of the manufacture
- b. Drug dosing equipment

**c. Adjuvants**

- d. WHO directives
- e. Compliance with GMP regulations

1033. 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. Oxidation of the hydrazine group with bromine**
- c. Oxidation of the hydrazine residue with potassium bromide
- d. Opening of the pyridine ring
- e. Reduction of the hydrazine residue with bromine

1034. 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. Mucaltin
- b. Infusion of Thermopsis grass
- c. Ambroxol syrup
- d. Ammonium chloride

**e. Potassium iodide**

1035. A pharmaceutical company uses the Boston Consulting Group matrix to analyze the state of its strategic business units (drugs). What is the BCG Matrix based on?

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

1036. 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. Ascorbic acid
- b. Codeine phosphate
- c. Ambroxol
- d. Acetylcysteine

**e. Doxycycline**

1037. Choose the solvent necessary to prepare concentrated solution of sodium bicarbonate in a pharmacy:

- a. Ethanol
- b. Peach-kernel oil
- c. Chloroform
- d. Vaseline

**e. Purified water**

1038. Silibor is a herbal drug that is used as a hepatoprotector. This drug is made from:

- a. Flores Crataegi
- b. Flores Centaureae cyani
- c. Herba Equiseti arvensis

**d. Semina Sylibi**

- e. Flores Tanacetii

1039. Herbal raw material quality depends on the period when it was harvested. Subterranean organs - roots, rhizomes, subterranean tubers - should be harvested:

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

1040. 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. Hydrolysis
- b. Complexation
- c. Oxidation
- d. Reduction
- e. Neutralization

1041. Merchandising is a complex of communication techniques that aim to increase the sales in the pharmacies. The main goal of merchandising is:

- a. Expanding the range of pharmaceutical goods
- b. -
- c. Price-cutting for unpopular medicines
- d. Decrease of the competition between the drug analogues
- e. Quick sales of the whole range of goods on offer in the pharmacies and an overall increase of sales

1042. A marketer of a pharmaceutical enterprise uses primary and secondary marketing information for market analysis. What information is considered to be primary?

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

1043. 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. OROS tablet
- b. Liposome
- c. Infusion therapeutic system
- d. Matrix tablet
- e. Transdermal therapeutic system

1044. 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. Cyanogen bromide
- b. Diphenylamine
- c. Aniline
- d. Pyridine
- e. Ninhydrin