

1. 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. Out-of-home advertising
- c. Point-of-sale advertising
- d. Film advertising
- e. Print advertising

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- a. Markups
- b. Profitability
- c. Expenses
- d. Commodity circulation
- e. Profit

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

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

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

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

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

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

- a. Chemical control
- b. Survey control

- c. Organoleptic control
- d. Physical control
- e. Written control

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

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

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

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

18. A pharmacy prepares an aqueous extract of thermopsis grass. What components should be used to prepare this aqueous extract?

- a. Thermopsis grass, sodium bicarbonate, purified water
- b. Thermopsis grass, purified water
- c. Thermopsis grass, sodium chloride, purified water
- d. Thermopsis grass, hydrochloric acid solution 1:10, purified water
- e. Thermopsis tincture, purified water

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

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

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

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

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

- a. 100% free
- b. With a 10% discount
- c. For the full cost
- d. With a 25% discount
- e. For 50% of the cost

22. 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. Hydroxylation
- b. Oxidation
- c. Hydrolysis
- d. Reduction
- e. Phosphorylation

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

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

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

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

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

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

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

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

27. 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. Magnesium sulfate solution
- c. Copper (II) sulfate solution
- d. Sodium nitrate solution
- e. Potassium bromide solution

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

- a. The head manager of the pharmacy
- b. A representative of the laboratory
- c. A financially accountable person
- d. An authorized person
- e. A pharmacist

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

- a. OROS tablet
- b. Microcapsule
- c. Spansule
- d. Pearl
- e. Tubatine

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

31. 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. Accountant
- d. Packer
- e. Pharmacist

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

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

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

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

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

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

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

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

36. 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. Introduction
- c. Maturity
- d. Development
- e. Growth

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

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

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

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

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

- a. Menthol
- b. Polyvinylpyrrolidone
- c. Midantan (Amantadine)
- d. Thiopental sodium
- e. Piracetam

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

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

41. 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  $-102^{\circ}$  to  $-105^{\circ}$
- b. From  $+10^{\circ}$  to  $+13^{\circ}$
- c. From  $+0,2^{\circ}$  to  $-0,2^{\circ}$
- d. From  $-48^{\circ}$  to  $-51^{\circ}$
- e. From  $+50^{\circ}$  to  $+56^{\circ}$

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

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

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

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

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

- a. Coumarins and phenol glycosides
- b. Essential and fatty oils

- c. Iridoids and vitamins
- d. Anthracene derivatives and tannins
- e. Flavonoids and essential oils

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

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

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

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

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

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

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

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

50. 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. Manufacture improvement
- c. Socioethical marketing
- d. Sales improvement
- e. Product improvement

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

- a. 1 month
- b. 5 weeks
- c. 2 weeks

d. 3 weeks

e. 5-7 days

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

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

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

54. 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. Specialized
- b. Decentralized
- c. Mixed
- d. Centralized
- e. Referent

55. Aqueous lanolin consists of:

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

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

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

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

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

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

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

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

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

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

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

61. 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. Coumarins
- d. Saponins
- e. Alkaloids

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

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

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

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

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

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

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

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

66. According to the requirements of the State Pharmacopoeia of Ukraine, thin-layer chromatography is a mandatory method of identification of herbal raw materials. What zones must be detected on a

chromatographic plate during the analysis of *Digitalis purpurea* herbal raw material?

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

67. 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. -
- b. Autocratic
- c. Personal
- d. Collegial**
- e. Intuitive

68. 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. Perfectly inelastic
- c. Inelastic
- d. Perfectly elastic**
- e. Unitary

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

- a. 24 hours
- b. 12 hours
- c. 7 days**
- d. 5 days
- e. 2 days

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

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

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

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

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

73. A 65-year-old man has been taking nitroglycerin continuously for 2 months. Lately, he has been

observing a gradual decrease in its clinical effect. Name the concept that describes this phenomenon:

- a. Idiosyncrasy
- b. Reye syndrome
- c. Tolerance
- d. Withdrawal syndrome
- e. Anaphylactic reaction

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

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

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

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

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

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

78. 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. Psychological dependence
- d. Physical dependence
- e. Sensitization

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

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

80. A herbal mix contains Cortex Frangulae, Folia Urticae, and Herba Millefolii. Name the characteristic microscopic features that allow identification of Folia Urticae herbal raw material:  
a. Bast fibers, tracheids, starch, vessels

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

- c. T-shaped hairs along the leaf margin
- d. Many-armed, two-armed, and simple hairs
- e. Simple capitate hairs

81. A thymol-containing herbal raw material is stored in the warehouse of a pharmaceutical company.

What are its proper storage conditions?

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

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

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

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

84. Bromatometry allows quantitative analysis of the following drug:

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

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

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

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

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

87. 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

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

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

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

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

- a. Helianthi oleum
- b. Lini oleum
- c. Ricini oleum**
- d. Maydis oleum
- e. Cucurbitae oleum

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

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

92. An alkaloid drug has the chemical name of 1,3,7-Trimethyl-3,7-dihydro-1H-purine-2,6-dione. Name this substance:

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

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

94. 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. Sifting
- c. Marking
- d. Packing
- e. Mixing

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

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

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

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

97. 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. Final
- b. Financial
- c. Current**
- d. Preliminary
- e. -

98. 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. Biseptol (Co-trimoxazole)
- c. Streptomycin
- d. Amoxicillin**
- e. Tetracycline

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

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

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

- a. Hypoglycemia
- b. Jaundice
- c. Osteoporosis**
- d. Hypotension
- e. Constipation

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

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

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

- a. Send the medicines back to the supplier

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

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

- e. Send the medicines to the Ministry of Health of Ukraine

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

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

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

What kind of account should be opened?

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

105. 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. Meta-analysis
- b. VEN analysis
- c. SWOT analysis
- d. XYZ analysis
- e. ABC analysis

106. 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. Combined
- b. -
- c. Organic
- d. Informal
- e. Mechanistic

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

- a. Atropa belladonna
- b. Hypericum
- c. Mentha
- d. Leonurus
- e. Styphnolobium japonicum

108. 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. Rhodiolae roseae rhizomata et radices
- e. Filicis maris rhizomata

109. 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

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

- a. Hepatotoxicity
- b. Nephrotoxicity
- c. Cardiotoxicity
- d. Hematotoxicity
- e. Chondrotoxicity

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

- a. Cashier's check
- b. Cash deposit slip
- c. Cash book
- d. Accompanying statement
- e. Payment order

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

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

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

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

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

- a. Medicines provided for free or at a discount due to social benefit programs
- b. Psychotropic drugs at the full price
- c. Anabolic steroids at the full price
- d. Clophelin (clonidine) tablets at the full price
- e. Narcotic substances in their pure form at the full price

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

- a. Organizational
- b. Economic
- c. Legal
- d. Psychosocial
- e. Simulation

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

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

117. How should the rectal ointments be applied?

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

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

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

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

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

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

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

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

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

123. 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. Economic
- c. Social and political
- d. Technological
- e. Social and psychological

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

- a. Chloroform
- b. Purified water

- c. Peach-kernel oil
- d. Vaseline
- e. Ethanol

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

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

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

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

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

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

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

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

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

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

130. 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. Organization
- b. Control**
- c. Planning
- d. Regulation
- e. Motivation

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

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

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

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

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

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

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

- a. Cholasos
- b. Allochol
- c. Chophytol
- d. Altan
- e. Phytolyt

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

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

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

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

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

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

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

139. 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. Type <<for injections>>
- b. No manganese salt admixtures
- c. Analytical grade pure

- d. Chemically pure, depyrogenated
- e. Anhydrous, analytical grade pure

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

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

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

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

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

143. 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. Geodesically
- b. Permanent quadrate method
- c. Visually
- d. Projective cover method
- e. Model sample method

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

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

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

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

146. 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. 300 mg
- c. 400 mg
- d. 200 mg

e. 500 mg

147. The method of stirring-up (dispersion) is used to make suspensions with a certain substance.

Name this substance:

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

148. 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 full liability
- b. 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
- c. A company, the members of which bear additional solidary liability for the company's obligations with all their property
- d. A company, the members of which bear the liability for the company's debts within the amount of their contributions
- e. A company, the members of which bear 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

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

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

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

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

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

152. 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. Sodium benzoate
- b. Boric acid
- c. Barium sulfate
- d. Resorcin
- e. Sodium chloride

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

- a. Boiling point
- b. Dissolution time

- c. Dry residue
- d. Resuspension
- e. Mechanical strength

154. 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. Ascorbic acid
- b. Cortisone acetate
- c. Paracetamol
- d. Streptocide
- e. Methionine

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

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

156. A patient developed dry cough while undergoing pharmacotherapy for arterial hypertension.

What group of drugs can be characterized by this side effect?

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

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

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

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

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

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

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

e. Nitroglycerin

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

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

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

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

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

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

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

165. 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. Contractual
- c. Administered
- d. Corporate
- e. Horizontal

166. 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. Alkaloids
- b. Tannins
- c. Anthracene derivatives
- d. Saponins
- e. Fatty oil

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

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

e. Ascorbic acid and aerosil (fumed silica)

168. 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. Acetylsalicylic acid

b. Ibuprofen

c. Diclofenac

d. Naproxen

e. Nimesulide

169. 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. Payment order

b. Cash withdrawal receipt

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

d. Cash cheque

e. Accounting form

170. 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. ABC analysis

b. -

c. VEN analysis

d. SWOT analysis

e. PEST analysis

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

a. Glucose

b. Gelatin

c. Calcium chloride

d. Sodium chloride

e. Protargol (Silver proteinate)

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

a. Fluoride

b. Nitrogen

c. Oxygen

d. Chlorine

e. Hydrogen

173. 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. Certificate of compliance with hygiene regulations

b. Sanitary-epidemiological certificate

c. Sanitary passport

d. Quality certificate

e. Registration certificate

174. 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. 100%

c. 60%

d. 70%

e. 50%

175. 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 request and order

b. Cash cheque

c. **Payment summary**

d. Payment order

e. Cheque payable

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

a. Roots

b. Grass

c. Seeds

d. Fruits

e. Leaves and flower heads

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

a. Lesser periwinkle

b. Garden sage

c. **Purple passionflower**

d. Elecampane

e. Three-lobe beggarticks

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

a. **Folia Vitis idaeae**

b. Folia Cotini coggygriae

c. Folia Urticae

d. Herba Bursae pastoris

e. Folia Digitalis lanata

179. 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. Hexanic

b. Glyoxylic

c. **Glutaconic**

d. Gluconic

e. Glutamic

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

a. Atropa belladonna tincture

b. Glycerine

c. Purified water

d. Dimexide (dimethyl sulfoxide)

e. Ethyl alcohol

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

a. Middlemen-oriented sales promotion

b. **Consumer-oriented sales promotion**

c. Personal sale

d. Salesmen-oriented sales promotion

e. Public relations, sponsorship

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

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

183. 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. Platiphyllin
- b. Codeine
- c. Papaverine
- d. Scopolamine
- e. Morphine

184. 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. Thickeners
- b. Plasticizers
- c. Stabilizers
- d. Preservatives
- e. Pigments

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

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

186. 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. True solution
- b. Emulsion
- c. Colloidal solution
- d. High-molecular compound solution
- e. Opalescent mixture

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

- a. Propranolol
- b. Fenoterol
- c. Nitroglycerin
- d. Amlodipine
- e. Verapamil

188. 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 23.00 to 7.00
- b. From 24.00 to 8.00
- c. From 21.00 to 9.00
- d. From 20.00 to 9.00
- e. From 22.00 to 6.00

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

- a. At least once a month

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

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

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

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

- a. Steam under pressure
- b. Not subject to sterilization
- c. Ultraviolet radiation
- d. Hot air
- e. Flowing steam

192. 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. Probiotics
- c. Enzymatic agents
- d. Sorbents
- e. Antacids

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

- a. Operational planning
- b. Financial planning
- c. Strategic planning
- d. Business planning
- e. -

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

- a. Motherwort grass
- b. Valerian roots and rhizomes
- c. Foxglove leaves
- d. Althaea roots
- e. Sage leaves

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

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

196. 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. Maslow's hierarchy of needs
- c. Vroom's expectancy theory
- d. Herzberg's two-factor theory

e. McClelland's theory of needs

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

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

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

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

199. 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. Material
- c. Special
- d. Financial
- e. -

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

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

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

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

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

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

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

204. 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. Ammonium chloride solution
- c. Sodium bicarbonate solution
- d. Sodium acetate solution
- e. Iron(III) chloride solution

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

- a. To maximize profits
- b. To create the image of high-quality medicine manufacturer
- c. To gain leadership due to high quality of manufactured medicines
- d. To ensure business survival
- e. -

206. 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. Control
- c. Motivation
- d. Delegation
- e. Organization

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

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

208. 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. Receipt of the funds for salary payment
- e. Return of unused accountable funds

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

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

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

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

211. 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. Alcohol precipitation

b. Ability to change color depending on the pH of the medium

c. Solubility in fats

d. Ability to sublime

e. Amorphous state

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

a. 3 mL

b. 6.25 mL

c. 7.5 mL

d. 12.5 mL

e. 10 mL

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

a. Advertising

b. Merchandising

c. Public relations

d. Personal sale

e. Lobbying

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

a. 10 ml

b. 2 ml

c. 15 ml

d. 5 ml

e. 20 ml

215. 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. Demographic

c. Behavioral

d. Geographic

e. Psychographic

216. A pharmacy has desided 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. Non-negotiable tangible assets

b. Fixed assets

c. Not accounted as assets

d. Goods

e. Package

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

a. 1:1000

b. 1:10

c. 1:4000

d. 1:1

e. 1:2000

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

a. Sulfuric acid solution

b. Sulfosalicylic acid solution

- c. Ninhydrin solution
- d. Barium hydroxide solution
- e. Saturated sodium bicarbonate solution

219. 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. What is the optimal preparation technique in this case?

- a. Measure out ethyl alcohol into a vial for dispensing, measure out salicylic acid
- b. Comminute the substance in a mortar, add the solvent
- c. Measure out the substance into a vial for dispensing, measure out ethyl alcohol, shake the vial
- d. Measure out the solvent into a stand, measure out the substance
- e. Measure out the substance into a stand, measure out the solvent

220. 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. Cash flow register
- b. Accounts ledger
- c. Commodity report
- d. Inventory
- e. Register of requisitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- a.  $E = \frac{m\_losses}{m\_raw\ material} \cdot 100\%$
- b.  $\mu = \frac{m\_end\ product}{m\_raw\ material} \cdot 100\%$
- c.  $m\_raw\ material = m\_end\ product + m\_losses$
- d.  $V = V_{tincture} \cdot n + m\_raw\ material \cdot K_{alcohol\ absorption}$
- e.  $V = V_{tincture} + m\_raw\ material \cdot K_{alcohol\ absorption}$

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

231. 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. Prazosin
- c. Nitroglycerine
- d. Captopril
- e. Corglycon (convallatoxin)

232. 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. Increased tone of the cough center
- c. Exacerbation of chronic bronchitis
- d. Gastroesophageal reflux
- e. Accumulation of residual bradykinin in the blood

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

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

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

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

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

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

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

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

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

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

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

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

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

240. 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. Sorting of herbal raw material
- c. Packing of herbal raw material
- d. Harvesting of herbal raw material
- e. Marking of herbal raw material

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

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

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

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

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

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

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

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

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

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

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

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

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

248. 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. Complaint
- b. Contract
- c. Offer
- d. Statement
- e. Request

249. 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. Vomiting
- b. Decreased blood pressure
- c. Increased blood pressure
- d. Red coloring of urine
- e. Ototoxicity

250. 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. Oxidation of terpenoids
- b. Oxidation of resins
- c. Volatilization of essential oils
- d. Enzymatic hydrolysis of cardiac glycosides
- e. Oxidation of phenolic compounds

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

- a. Mixed
- b. Vertical
- c. Combined
- d. -
- e. Horizontal

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

- a. Gastrointestinal bleeding
- b. Pyelonephritis
- c. Salivation
- d. Myocarditis
- e. Pneumonia

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

- a. Cyclopentane iridoids
- b. Valepotriates
- c. Common iridoids
- d. Secoiridoids
- e. Complex iridoid alkaloids

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

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

255. 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. Berberis roots
- c. Taraxacum roots
- d. Aralia mandshurica roots
- e. Panax ginseng roots

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

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

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

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

- a. Flowing steam
- b. Pasteurization
- c. Ultraviolet irradiation
- d. Membrane filtration
- e. Dry heat

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

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

- a. 15-20<sup>o</sup>C
- b. 25-35<sup>o</sup>C
- c. 30-45<sup>o</sup>C
- d. 80-100<sup>o</sup>C
- e. 45-55<sup>o</sup>C

261. 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 30 m<sup>2</sup>
- c. No less than 40 m<sup>2</sup>
- d. No less than 50 m<sup>2</sup>
- e. No less than 250 m<sup>2</sup>

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

- a. Medules
- b. Tubatines
- c. Spansules

- d. Microcapsules
- e. Rectal capsules

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

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

264. 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 every 5 days
- d. Once in a shift**
- e. Once every 10 days

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

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

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

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

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

- a. KMnO<sub>4</sub>
- b. K<sub>2</sub>CrO<sub>4</sub>
- c. K<sub>2</sub>[HgI<sub>4</sub>]
- d. FeCl<sub>3</sub>**
- e. [NH<sub>4</sub>]<sub>2</sub>C<sub>2</sub>O<sub>4</sub>

268. 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. Social
- b. Economic**
- c. Legal
- d. Medical
- e. Technological

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

270. 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. Material stimuli that include salary rates, extra pay, increments, bonuses, etc.
- b. -
- c. The process of distribution of duties between the technical level managers
- d. Plan for improvement of the working conditions at the pharmaceutical facility**
- e. The process of salary calculation for the sales department employees

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

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

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

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

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

275. 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. Aurine dye
- c. Azo dye**
- d. Iron(III) hydroxamate
- e. Azomethine dye

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

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

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

assessment:

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

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

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

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

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

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

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

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

- a. Etacrynic acid
- b. Urea
- c. Insulin
- d. Metformin
- e. Glibenclamide

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

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

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

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

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

- a. Commercial report

b. Inventory item description

c. Checklist

d. Act on the inventory results

e. Invoice

285. 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. Diversification

b. Consolidation

c. Product development

d. Market development

e. Market penetration

286. 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. Methyl group

b. Methylene group

c. Chloride ions

d. Lactonic ring

e. Imidazole ring

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

a. Drug manufacturer

b. Head manager of the retail pharmacy

c. Physician

d. Pharmacist

e. Patient

288. 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 month

b. In a week

c. In 10 days

d. In 3 days

e. In 5 days

289. 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. Reduced sensitivity

d. Dysbacteriosis

e. Bronchospasm

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

a. Dichloroethane

b. Chloroform

c. Ammonia solution

d. Aqueous-alcoholic solutions

e. Water

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

What type of distribution is characteristic of radioactive drugs?

a. Exclusive

b. Bulk

c. Selective

- d. Intensive
- e. Sample

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

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

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

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

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

295. 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. Hypermagnesemia
- b. Hyperkalemia
- c. Hypocalcemia
- d. Hypokalemia
- e. Hypernatremia

296. 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. Xanthones
- b. Flavonoids
- c. Coumarins
- d. Lignans
- e. Iridoids

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

- a. Separation of the mixture consisting of mutually-associating liquids with different boiling temperature into separate fractions
- b. Technology of obtaining liquid extracts
- c. Deep vacuum distillation
- d. Rinsing of exhausted raw material with 3-5 times the amount of ethanol
- e. Distillation with inert gases

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

- a. Nitric acid solution
- b. Hydrochloric acid solution
- c. Tartaric acid solution

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

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

- a. Increased hematotoxicity of gentamicin
- b. Increased hepatotoxic action of aminoglycosides
- c. Increased ototoxicity of aminoglycosides
- d. High risk of seizures
- e. High risk of allergic reactions

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

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

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

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

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

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

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

- a. Informal
- b. Formal
- c. Committee
- d. Manufacturing
- e. Commercial

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

- a. Folia Eucalypti
- b. Folia Menthae piperitae
- c. Folia Betulae

- d. Folia Absinthii
- e. Folia Salviae

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

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

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

- a. The State Service of Ukraine for Medicines
- b. The Audit Chamber of Ukraine
- c. The State Service of Ukraine for Drug Control
- d. The Control and Revision Office
- e. The State Regulatory Service of Ukraine

308. An accountable person has received a sum of money from the pharmacy cash desk to buy a calculator. What document records the cash flow in such a transaction?

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

309. 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. Fructus Hippophaes
- c. Folia Fragariae
- d. Folia Menthae piperitae
- e. Folia Urticae

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

- a. Toxic proteins
- b. Phenol-alcohols
- c. Alkaloids
- d. Cardiac glycosides
- e. Glucosinolates

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

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

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

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

313. At the laboratory of a pharmaceutical company, a corticosteroid medicinal substance - hydrocortisone acetate - is being analyzed. What cycle in its molecule causes the appearance of an

intense bright yellow coloring, when concentrated sulfuric acid is added?

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

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

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

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

316. A pharmacist needs to weigh out a medicinal substance from the general list - glucose. What minimum amount of glucose can be weighed out using one-gram hand scales?

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

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

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

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

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

319. Althaea officinalis roots require special conditions for infusion. What special technique must be used for infusion of this herbal raw material?

- a. Immediate filtration
- b. The presence of ascorbic acid
- c. The presence of hydrochloric acid
- d. Cold infusion
- e. The presence of sodium bicarbonate

320. 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. Communications

- b. Supply
- c. Marketing
- d. Trademark
- e. Advertisement

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

- a. Dalton's law
- b. -
- c. Boyle-Mariotte law
- d. Raoult's law
- e. Clapeyron-Mendeleev equation

322. 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. 30 minutes
- b. 10 minutes
- c. 45 minutes
- d. 15 minutes
- e. 25 minutes

323. 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. Bankruptcy
- c. Diversification
- d. Insurance
- e. Liquidation

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

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

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

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

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

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

327. 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 for laboratory testing
- b. Withdraw the medicines and send them back to the supplier
- c. Withdraw the medicines and send them for disposal
- d. Withdraw the medicines and send them back to the manufacturing factory
- e. Withdraw the medicines and send them to the quality assurance department of the manufacturing company

328. 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. Sulfates
- b. Pyrogenic substances
- c. Moisture
- d. Redox substances
- e. Chlorides

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

- a. Macleaya cordata
- b. Vinca minor
- c. Chelidonium majus
- d. Glaucium flavum
- e. Passiflora incarnata

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

331. 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. Acidimetry
- b. Nitritometric titration
- c. Bromometry
- d. Complexometric titration
- e. Alkalimetry

332. Which of the plants listed below contain inulin?

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

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

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

334. A 53-year-old woman suffers from ischemic heart disease and angina pectoris. What drug can be used to stop angina pectoris attacks?

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

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

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

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

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

- a. Methyl orange
- b. Naphtholbenzein
- c. Ferroin**
- d. Crystal violet
- e. Methyl red

338. 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. Employee turnover
- b. Horizontal rotation**
- c. Vertical rotation
- d. Mixed rotation
- e. Diagonal rotation

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

- a. Potentiometry
- b. Argentometry
- c. Acidimetry
- d. Cerimetry
- e. Spectrophotometry**

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

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

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

- a. Menthol
- b. Ephedrine hydrochloride
- c. Protargol (silver proteinate)**

d. Camphor

e. Xeroform

342. Polemonium caeruleum rhizomes with roots are a source material for making expectorants. What group of substances causes this effect?

a. Vitamins

b. Flavonoids

c. Saponins

d. Anthraquinones

e. Tannins

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

a. Lincomycin

b. Co-trimoxazole

c. Levomycetin (Chloramphenicol)

d. Ceftriaxone

e. Clarithromycin

344. The thyme grass is used for the production of herbal medical products for the treatment of respiratory tract infections. Under the State Pharmacopoeia of Ukraine the herbal raw material is subject to chromatographic identification by means of thin layer chromatography. What substances are detected on the chromatographic plate after its treatment with due reagent?

a. Atropine and hyoscyamine

b. Thymol and carvacrol

c. Quercetin and rutin

d. Apigenin and luteolin

e. Arbutin and methyl arbutin

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

a. 1 hour before a meal

b. Regardless of food intake

c. 1 hour after a meal

d. During eating

e. 2 hours before a meal

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

a. Procaine hydrochloride

b. Clonidine hydrochloride

c. Papaverine hydrochloride

d. Pilocarpine hydrochloride

e. Morphine hydrochloride

347. A powder with a hard to disintegrate substance has been made in a pharmacy. Specify this substance:

a. Sugar

b. Sodium chlorides

c. Osarsolum (Acetarsol)

d. Talcum

e. Camphor

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

a. Behavioral approach

b. Geographical approach

c. Demographic approach

d. Psychographic approach

e. -

349. What preparation has an antacid effect?

- a. Famotidine
- b. Pirenzepine
- c. Aluminum phosphate
- d. Omeprazole
- e. Ranitidine

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

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

351. What pharmaceutical factor can affect therapeutic activity of active substances?

- a. Drug dosing equipment
- b. Material expences of the manufacture
- c. WHO directives
- d. Adjuvants
- e. Compliance with GMP regulations

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

- a. Nimesulide
- b. Ibuprofen
- c. Indomethacin
- d. Metamizole sodium
- e. Acetylsalicylic acid

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

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

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

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

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

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

- a. Propylene glycol, gelatin
- b. Sodium lauryl sulfate
- c. Benzalkonium chloride
- d. Paraffin, spermaceti

e. Ethanol, purified water

357. A patient measures out a necessary dose of a mixture, using a tablespoon. How many milliliters of liquid does one tablespoon contain?

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

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

359. 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. Staff turnover
- c. Personnel certification
- d. Staff motivation
- e. Job rotation

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

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

361. 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 periodical publications
- b. Analysis of the statistical reference books
- c. Analysis of the company's statistical reports
- d. Customer survey
- e. Analysis of the scientific publications

362. 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. Combined
- b. Direct
- c. Mediated
- d. Indirect
- e. Mixed

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

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

364. A patient has been diagnosed with essential hypertension and prescribed an adequate treatment

with antihypertensive drugs. However, two months later the patient began to notice a slight cough. What drug can cause this side effect?

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

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

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

366. 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. 35 000 UAH
- b. 15 000 UAH
- c. 40 000 UAH
- d. 30 000 UAH
- e. 5 000 UAH

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

- a. 10 mL
- b. 54 mL
- c. 20 mL
- d. 30 mL
- e. 5 mL

368. 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. Monetary funds
- b. Goods
- c. Herbal raw materials
- d. Buildings
- e. Packaging

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

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

371. A medicine has caused a side effect in the patient due to the patient's hereditary defect of the enzymatic system. This phenomenon is called:

- a. Idiosyncrasy
- b. Drug dependence
- c. Withdrawal syndrome
- d. Allergic response
- e. Dysbiosis

372. 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. Sanguisorba officinalis
- b. Zingiber officinale
- c. Althaea officinalis
- d. Inula helenium
- e. Taraxacum officinalis

373. 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. Vertical descending
- c. Vertical ascending
- d. Intra-level
- e. Horizontal

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

- a. Metronidazole
- b. Levofloxacin
- c. Acyclovir
- d. Amikacin
- e. Fluconazole

375. To measure out a small amount of liquid, a stactometer is used. How many drops are there in 1 mL of purified water, if we are to use a standard stactometer?

- a. 10
- b. 50
- c. 20
- d. 40
- e. 30

376. What technology should be chosen by a pharmacist to make a liquid dosage form, if it contains calcium gluconate?

- a. Dissolve in the water free of redox substances
- b. First grind it into powder when it is dry or with small amount of solvent added
- c. Dissolve in alkaline medium
- d. Add equal amount of sodium chloride
- e. Dissolve it in hot solvent or heat it up to full dissolution

377. 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. 1 ml
- c. 0,5 ml
- d. 5 ml
- e. 10 ml

378. What lubricants are used in tablet manufacturing?

- a. Starch paste
- b. Calcium stearate, stearic acid

- c. Solutions of high-molecular compounds
- d. Water, ethanol
- e. Tween 80, Aerosil

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

- a. Corn starch
- b. Refined sugar
- c. Rice starch
- d. Mannitol
- e. Lactose

380. A pharmaceutical company produces belladonna tincture. In the process of standardization, excessive content of active substances was detected. How can this situation be remedied?

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

381. "Immunal" immunostimulant is often prescribed against chronic upper respiratory tract infections. What herbal raw material is used in its production?

- a. Radices Ginseng
- b. Radices Araliae elata
- c. Radices Rhei
- d. Herba Echinaceae purpurea
- e. Rhizomata et radices Eleuterococci

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

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

- a. Pneumatic
- b. Ultrasonic
- c. Mechanical
- d. Circulation
- e. Acoustic

384. 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

385. What medicine would be most advisable for symptomatic treatment of constipation in pregnant women?

- a. Bisacodyl
- b. Macrogol

- c. Lactulose
- d. Ononis herbal medicine
- e. Senadexine (sennosides A and B)

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

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

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

388. Advertising is the most popular and widely used part of marketing communications system.

What cannot be included into the advertisements for medicines?

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

389. An analytical chemist identifies diphenhydramine hydrochloride (Dimedrol). What reagent produces a bright yellow coloring when reacting with this substance?

- a. Concentrated sulfuric acid
- b. Perchloric acid 0.1 M
- c. Diluted hydrochloric acid
- d. Anhydrous acetic acid
- e. Diluted phosphoric acid

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

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

391. Which of the following diuretics SHOULD NOT be given to the patients with impaired hearing?

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

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

- a. Increase the amount of table salt in the diet
- b. Increase the physical exertion
- c. Increase the amount of liquids in the diet
- d. Decrease the physical exertion

e. Decrease the amount of table salt in the diet

393. In the process of price formation, a pharmaceutical company takes into account both internal and external factors. What factor is an external one?

a. Manufacturing costs

b. State regulation of price formation

c. The stage of the product life cycle

d. Marketing strategy of the company

e. Marketing goals of the company

394. 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. 750 000 UAH

c. 3 000 000 UAH

d. 500 000 UAH

e. 100 000 UAH

395. 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. Introduce the substances as a suspension

b. Dissolve the substances in the water heated to 45°C

c. Melt all of fatty vehicle and dissolve the substances there

d. Introduce the substances as an emulsion

e. Melt a part of fatty vehicle and dissolve the substances there

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

a. Pancreas of pigs or cattle

b. Lungs of cattle

c. Heart of cattle

d. Gastric mucosa of pigs

e. Egg white

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

a. -

b. Bonuses

c. In-store advertising

d. Layout of medical products in shop-windows and on shelves

e. Coupons

398. A doctor has prescribed a mixture containing several types of herbal raw material. Extracts of the following raw materials can be obtained in one infusion apparatus:

a. Mint leaves, Althaea roots

b. Mint leaves, flax seeds

c. Mint leaves, buckthorn bark

d. Mint leaves, chamomile flowers

e. Mint leaves, Arctostaphylos leaves

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

a. To improve tablet breakup

b. To obtain tablets of a certain mass

c. To improve granulate flowability

d. To improve adhesion of particles to each other

e. To improve the taste

400. A patient suffers from avitaminosis C) The physician has prescribed a course of phytotherapy.

What herbal raw material is rich in this vitamin?

- a. Fructus Sorbi
- b. Cortex Quercus
- c. Cortex Viburni opuli
- d. Folium Menthae piperitae
- e. Rhizoma Tormentillae

401. 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 Menthae piperitae
- b. Folia Eucalypti
- c. Folia Betulae
- d. Folia Melissae
- e. Folia Absinthii

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

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

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

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

404. 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. Spironolactone
- b. Lisinopril
- c. Furosemide
- d. Nifedipine
- e. Propranolol

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

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

406. A woman with chronic bronchitis was prescribed azithromycin. After a time, she developed complaints of abdominal pain and distension, diarrhea, nausea, and vomiting. What side effect is observed in this patient?

- a. Dysbiosis
- b. Allergic response
- c. Chondrotoxicity
- d. Photosensitization
- e. Nephrotoxicity

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

- a. Benzaldehyde
- b. Hydroxyquinoline
- c. Furfural
- d. Aniline
- e. Resorcinol

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

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

409. 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. Panaxosides
- b. Glucofrangulins**
- c. Ginkgosides
- d. Lanatosides
- e. Purpurea glycosides

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

- a. Spiritus saponatus**
- b. Purified water
- c. Peach oil
- d. Ethyl alcohol
- e. Vaseline oil (liquid paraffin)

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

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

412. 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. 0.2 g
- b. 0.3 g
- c. 0.5 g
- d. 0.25 g**
- e. 0.1 g

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

414. According to the current Ukrainian legislation all drugs are divided into two categories: prescription and nonprescription (over-the-counter). Which one of the listed drugs requires no prescription?

- a. Tramadol, capsules, 0,05 №10
- b. Phenobarbital, tablets, 100 mg №6
- c. Clonidine, ampoules, 1 ml of 0,01% solution №10
- d. Ascorbic acid, 500 mg №30**
- e. Ketamine, 5% infusion solution, 2 ml №10

415. 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. Mortars
- b. Scalpel
- c. Sieve**
- d. Tweezers
- e. Filter

416. An analytical laboratory has received a procaine hydrochloride substance for analysis. According to the State Pharmacopoeia of Ukraine limit content of heavy metals should be determined with the following reagent:

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

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

- a. Glucose
- b. Brilliant green**
- c. Hydrogen peroxide
- d. Ethyl alcohol
- e. Ascorbic acid

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

- a. Ampicillin**
- b. Rifampicin
- c. Amikacin
- d. Cephalexin
- e. Methacycline

419. 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. Sap flow**
- c. Flowering
- d. Dormancy
- e. Defoliation

420. 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. -
- c. Professional-targeted advertising
- d. Advertising souvenirs
- e. Out-of-home advertising**

421. 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. 50% of salary
- b. 90% of salary
- c. 75% of salary
- d. 100% of salary**
- e. 60% of salary

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

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

423. 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. 0.25 g and 100 mL
- e. 10.0 g and 100 mL

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

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

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

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

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

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

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

- a. Adrenalin
- b. Prednisolone
- c. Synoestrol (Hexestrol)**
- d. Progesterone
- e. Retabolil (Nandrolone)

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

- a. Lignans
- b. Anthracene derivatives**

- c. Coumarins
- d. Cardiac glycosides
- e. Saponins

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

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

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

431. A pharmacist has prepared an oak bark decoction. What is the ratio of the herbal raw material to extractant?

- a. 1:30
- b. 1:10
- c. 1:400
- d. 1:20
- e. 1:5

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

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

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

- a. Arctostaphylos leaves
- b. Buckthorn bark
- c. Marshmallow roots
- d. Mint leaves
- e. Thermopsis grass

434. 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. 100 days
- b. 70 days
- c. 50 days
- d. 126 days
- e. 115 days

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

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

e. Metronidazole

436. 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. Irregular
- b. Inadequate
- c. Unrealized
- d. Incorrect
- e. Irrational

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

- a. -
- b. Resist changes in the organization

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

438. The head manager of a pharmacy calls the manager of a pharmaceutical wholesaler to clarify the terms of supply. What type of communication is it?

- a. Horizontal
- b. Interlevel
- c. External

- d. Vertical
- e. Internal

439. 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. Interorganizational
- b. Individual vs. group
- c. Intrapersonal

- d. Intergroup
- e. -

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

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

- e. Zinc oxide, talcum

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

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

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

- a. Vaccinium myrtillus
- b. Rhamnus cathartica
- c. Schisandra chinensis
- d. Prunus padus

e. Ribes nigrum

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

- a. Stearic acid, calcium and magnesium stearate, starch, talcum
- b. Purified water, starch glue, sugar syrup, gelatin, carboxymethylcellulose solution
- c. Methylcellulose, polyvinylpyrrolidone, acetylphthalylcellulose
- d. Sugar, glucose, essential oils, menthol, fruit juice concentrates, indigo carmine, iron oxide, mannitol
- e. Starch, glucose, kaolinite, magnesium oxide, sodium bicarbonate

444. 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. Prednisolone
- b. Zopiclone
- c. Ethyl alcohol
- d. Atropine sulfate
- e. Tramadol

445. 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. Oligopoly
- b. Economic planning
- c. Pure monopoly
- d. Monopolistic competition
- e. Pure competition

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

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

447. 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. 10%
- b. 2%
- c. 20%
- d. 3%
- e. 30%

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

- a. Psychosocial management methods
- b. Economic management methods
- c. Legal management methods
- d. Indirect control methods
- e. Organizational management methods

449. A medicinal plant contains hydroxycoumarins and is used in production of venotonic agents. Name the herbal raw material harvested from this plant:

- a. Semina Hippocastani
- b. Fructus Dauci carotae
- c. Herba Meliloti

- d. Fructus Pastinacae sativae
- e. Fructus Ammi majoris

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

451. 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. Insulin
- c. Arphasetin
- d. Glibenclamid
- e. Exenatide

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

- a. Chelidonium majus
- b. Hyoscyamus niger
- c. Berberis vulgaris
- d. Papaver somniferum
- e. Atropa belladonna

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

- a. Glassware
- b. Metal cylinders
- c. Packaging materials
- d. Paper boxes
- e. Glass-stoppered bottles

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

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

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

456. 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. Reduction
- b. Complexation
- c. Hydrolysis

- d. Neutralization
- e. Oxidation

457. What medicine is recommended to reduce the risk of gastrointestinal bleeding during a long-term treatment with an acetylsalicylic acid-based antiaggregant?

- a. Spironolactone
- b. Omeprazole
- c. Metamizole sodium
- d. Ceftriaxone
- e. Prednisolone

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

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

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

- a. Oleum Persicorum
- b. Oleum Cacao
- c. Oleum Jecoris
- d. Oleum Lini
- e. Oleum Cucurbitae

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

461. 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. Saturation
- b. Maturity
- c. Decline
- d. Introduction
- e. Growth

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

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

463. 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. Agent
- b. Commission agent
- c. Broker
- d. Dealer
- e. Consignee

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

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

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

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

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

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

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

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

469. 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. Sterility
- c. pH
- d. Microbiological purity
- e. Identification

470. Standard stactometer divides 1 ml of water into:

- a. 25 drops
- b. 15 drops
- c. 30 drops
- d. 10 drops
- e. 20 drops

471. Working hours for the pharmacy workers are reduced. What is the length of the work week for

the pharmacist-analyst?

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

472. 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. Countermarketing
- b. -
- c. Synchromarketing
- d. Conversion marketing
- e. Remarketing

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

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

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

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

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

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

476. 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. Hydrodistillation
- c. Compression
- d. Dynamic sorption
- e. Extraction

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

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

478. When developing a new medicine, marketologists of the pharmaceutical company have conducted an isolated research to determine the doctors' opinion of the medicines currently available

on the market. What method of marketing research was used?

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

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

- a. Buckthorn bark
- b. Rhubarb roots
- c. Valerian rootstock**
- d. Arrow-wood bark
- e. Oak bark

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

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

481. Pharmacy workers can receive an extra pay, if they combine several professions or positions, take upon themselves the duties of a temporarily absent employee, or have to manage an increased workload. In this case, the maximum possible bonus constitutes the following percentage of the employee's salary:

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

482. 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. Acetylsalicylic acid
- b. Metoclopramide
- c. Omeprazole**
- d. Clarithromycin
- e. Papaverine hydrochloride

483. 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. Amide group
- b. Phenolic hydroxyl
- c. Alcoholic hydroxyl
- d. Aldehyde group**
- e. Ester group

484. 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 alcohol
- c. Dissolve in vaseline oil
- d. Dissolve in Dimexid (Dimethylsulfoxide)
- e. Dissolve in molten cocoa butter

485. A herbal raw material was sent for analysis: rounded cordate leaves with incised margins that

are irregularly, coarsely, and finely toothed; the upper leaf surface is naked, while its lower surface is covered in white down. Leaf petioles are thin, with a groove on the upper part, often downy. Leaf blade length is usually 8-15 cm, a petiole is approximately 5 cm long. The upper leaf surface is green, while the lower leaf surface is whitish-gray. No odor. The taste is slightly bitter with a slimy texture.

What herbal raw material is it?

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

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

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

487. What pharmacological group of drugs CANNOT be combined with expectorants?

- a. Mucolytic agents
- b. Antibacterial drugs
- c. Antitussive drugs
- d. Polyvitamins
- e. Decongestants

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

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

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

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

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

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

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

- a. The group leader receives authority from the group
- b. They are created to implement the production process
- c. They form spontaneously
- d. They form as a result of interest, sympathy
- e. They resist changes in the organization

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

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

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

- a. Collective agreement
- b. Statement
- c. Job description
- d. Contract of delivery
- e. Decree

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

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

495. 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. 1.5-6.0 g
- d. 2.0-6.5 g
- e. 1.0-4.0 g

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

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

497. 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. Received from a higher-level organization
- b. Personal
- c. -
- d. Collegial
- e. Individual

498. 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. One-level channel
- d. Three-level channel
- e. Zero-level channel

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

- a. Nifuroxazide
- b. Nitroxoline

- c. Furadonin (Nitrofurantoin)
- d. Nalidixic acid
- e. Furacilin (Nitrofural)

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

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

501. A dispensing chemist makes a research into the pharmaceutical market. For this purpose he uses scientific publications and statistical data. What type of marketing research is it?

- a. Observation
- b. Theoretical research
- c. Panel research
- d. Survey
- e. Field research

502. 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. Anticoagulants
- b. Nitrates
- c. beta-adrenergic blockers
- d. Calcium antagonists
- e. Statins

503. 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 valerenic acids, - valtrate, acevaltrate, and dihydrovaltrate:

- a. Saponins
- b. Alkaloids
- c. Essential oils
- d. Iridoids
- e. Polysaccharides

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

505. "Balance" accounting form consists of two parts - assets and liabilities. Select from the list only the liabilities.

- a. Fixed assets, accounts receivable
- b. Accounts receivable, prepaid expenses
- c. Authorized capital, fixed assets
- d. Retained earnings, intangible assets
- e. Bank loan, accounts payable

506. 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. 90 000 UAH

- b. 32 000 UAH
- c. 62 000 UAH
- d. 60 000 UAH
- e. 2 000 UAH

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

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

508. 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. Conical, glabrous, and hollow receptacle
- e. Solid hemispherical receptacle

509. 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. Submission of a resume
- b. Filling in a questionnaire
- c. Targeted selection interview
- d. Telephone interview
- e. Preliminary interview

510. Incoming medicines inspection is performed by an authorized employee. What is NOT a part of the responsibilities of this person?

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

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

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

- a. Phenolic compounds
- b. Anthracene derivatives
- c. Cardiac glycosides
- d. Alkaloids
- e. Flavonoids

513. To identify acetylsalicylic acid, the substance is subjected to alkaline hydrolysis. After acidification of the reaction mixture, acetic acid is formed, which can be detected using the reaction with ethanol in the presence of concentrated sulfuric acid. What reaction product causes the characteristic odor in this case?

- a. Benzaldehyde

- b. Ammonia
- c. Ethyl acetate
- d. Sulfur dioxide
- e. Pyridine

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

515. 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. 60% of the average salary
- b. 100% of the average salary
- c. 70% of the average salary
- d. 50% of the average salary
- e. 80% of the average salary

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

517. 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. Nitrites
- b. Fluorides
- c. Iodides
- d. Bromides
- e. Sulfates

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

- a. Herba Polygonii avicularis
- b. Flores Helichrysi arenarii
- c. Fructus Hippophaes rhamnoides
- d. Herba Violae tricoloris
- e. Fructus Sophorae japonicae

519. 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. 90%
- b. 95%
- c. 70%
- d. 40%
- e. 60%

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

- a. Sodium tetraphenylborate

- b. Barium chloride
- c. Thioglycolic acid
- d. Sodium hypophosphite
- e. Hydroxyquinoline

521. 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. Pepsin
- d. Tannin
- e. Copper sulfate

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

- a. Increase of oral contraceptives effectiveness
- b. -
- c. Reduction of the antibacterial effect of doxycycline
- d. Reduction of oral contraceptives effectiveness
- e. Increase of the antibacterial effect of doxycycline

523. 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. Bismuth subcitrate
- c. Metronidazole
- d. Tetracycline
- e. Tinidazole

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

- a. Potassium pyroantimonate
- b. Potassium permanganate
- c. Sodium citrate
- d. Barium hydroxide
- e. Potassium carbonate

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

- a. Department of curative cosmetics
- b. Compounding and production department
- c. Department of over-the-counter drugs
- d. Inventory department
- e. Department of finished dosage forms

526. A pharmaceutical company produces tablets. Tabletting by means of direct compression requires:

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

527. 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. Nitroglycerin
- b. Diclofenac sodium
- c. Drotaverine
- d. Captopril
- e. Bisoprolol

528. Name the optimal vehicle for soluble vaginal suppositories:

- a. Hard fat
- b. Glycerine
- c. Cocoa butter
- d. Polyethylene oxide**
- e. Fat

529. 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. Quick sales of the whole range of goods on offer in the pharmacies and an overall increase of sales**
- c. Price-cutting for unpopular medicines
- d. Decrease of the competition between the drug analogues
- e. -

530. 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

531. 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

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

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

534. A pharmaceutical factory uses dragee machines to apply multiple layers of active substances and adjuvants to sugar granules. The end product of this process is the following dosage form:

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

535. Erythromycin belongs to the following type of antibiotics based on its chemical structure:

- a. Aromatic antibiotics

- b. Polyene antibiotics
- c. beta-lactams
- d. Macrolides**
- e. Polypeptides

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

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

537. 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. Inhibition of the prothrombin synthesis**
- d. Changed volume of distribution
- e. Decreased absorption in the gastrointestinal tract

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

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

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

- a. Vehicle
- b. Densifier**
- c. Dispersing agent for powders
- d. Preservative
- e. Emulsifier

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

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

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

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

542. 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. Streptocide (Sulfanilamide)
- c. Furacilin (Nitrofurazone)**

- d. Sodium bromide
- e. Sodium iodide

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

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

544. 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.  $\text{AgNO}_3$
- b.  $\text{NH}_3$
- c.  $\text{FeCl}_3$
- d. Concentrated  $\text{HNO}_3$
- e.  $\text{K}_3[\text{FeCN}]_6$

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

- a. Sales
- b. Marketing
- c. Market
- d. Agreement
- e. Management

546. In the process of phytochemical examination of buckthorn bark, the reaction with alkaline solution resulted in red coloring, which indicates the presence of the following:

- a. Alkaloids
- b. Flavonoids
- c. Saponins
- d. Anthracene derivatives
- e. Slime

547. 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. Resorcinol
- c. Benzocaine
- d. Chlorpropamide
- e. Acetylsalicylic acid

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

- a. Receipts and expenditures report
- b. Business transactions log book
- c. Balance sheet
- d. Double entry
- e. Turnover balance sheet

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

- a. Ambroxol
- b. Codeine phosphate
- c. Doxycycline
- d. Ascorbic acid

e. Acetylcysteine

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

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

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

- a. Ninhydrin test
- b. Hydroxamate test
- c. Iodoform test
- d. Thalleioquin test
- e. Murexide test

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

553. 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. Replacement of over 30% of the initial personnel
- b. Change of the head manager or replacement of over 50% of the initial personnel
- c. Change of the chief accountant
- d. Change of the janitor
- e. Change of the dispensing chemist

554. 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. Negative
- b. Irrational
- c. Satisfied
- d. Hidden
- e. Unsatisfied

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

- a. Reaction with Fehling's reagent
- b. Reaction with an alkali
- c. Reaction with iron sulfate
- d. Reaction with Dragendorff's reagent
- e. Reaction with ammonium iron(III) sulfate

556. What adjuvants are added to a tablet mass to promote its breakup?

- a. Disintegrants
- b. Lubricants
- c. Thickeners
- d. Fillers
- e. Antioxidants

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

- a. Introduction as a suspension into the prepared emulsion
- b. Dissolution in oil

- c. Dissolution in the prepared emulsion
- d. Dissolution in water to prepare the primary emulsion
- e. Comminution with the water intended for the dilution of the primary emulsion

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

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

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

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

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

- a. Alongside medicines
- b. On separate shelves and in separate shopwindows**
- c. By their Anatomical Therapeutic Chemical Classification
- d. By their application
- e. By their pharmacotherapy group

561. 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. Transdermal therapeutic system
- b. Liposome**
- c. Matrix tablet
- d. OROS tablet
- e. Infusion therapeutic system

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

- a. Thiazole
- b. Imidazole**
- c. Furan
- d. Pyrazole
- e. Pyrrole

563. Presence of nitrate radical in metronidazole structure can be confirmed by reduction of nitrate radical to amino group with production of:

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

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

- a. 5 minutes**
- b. 3 minutes
- c. 60 minutes

- d. 15 minutes
- e. 30 minutes

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

- a. Cephalosprins
- b. Aminoglycosides
- c. Macrolides
- d. Carbapenems
- e. Penicillins

566. An analytical pharmacist uses cerimetry for quantification of nifedipine. What indicator is used in this method?

- a. Methyl orange
- b. Potassium chromate
- c. Ferroin
- d. Tropeolin 00
- e. Phenolphthalein

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

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

568. 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

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

- a. Acridine
- b. Hydroxyquinoline
- c. Methyl isothiocyanate
- d. Naphthoquinone
- e. Furfural

570. 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. 10%
- b. 5%
- c. 20%
- d. 1%
- e. 15%

571. 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. Starch

- c. Streptocid
- d. Talcum
- e. Zinc oxide

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

- a. Menthol
- b. Camphor
- c. Starch
- d. Streptocide (Sulfanilamide)
- e. Salicylic acid

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

574. Specialists of a pharmaceutical enterprise confirm the identity of Cassia acutifolia herbal raw material. During reaction with alkali it developed cherry-red coloring. What substances were identified?

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

575. 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. Ibuprofen tablets
- b. Acetylsalicylic acid tablets
- c. Paracetamol rectal suppositories
- d. Acetylsalicylic acid powder
- e. Diclofenac sodium tablets

576. 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. Calcium antagonists
- c. Ganglionic blockers
- d. Diuretics
- e. beta-adrenergic blockers

577. 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. 3.9 g
- b. 1.4 g
- c. 2.4 g
- d. 1.9 g
- e. 2.9 g

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

- a. Residue of n-aminobenzoic acid

- b. Diethylamino group
- c. Unsubstituted aromatic cycle
- d. Bound hydrochloric acid**
- e. Ester bond

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

- a. Oleum Lini
- b. Oleum Cucurbitae
- c. Oleum Amygdalarum**
- d. Oleum Ricini
- e. Oleum Maydis

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

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

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

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

- a. Sodium hydroxide
- b. Calcium chloride
- c. Iron(II) sulfate
- d. Potassium ferrocyanide**
- e. Potassium bromide

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

- a. Kidney failure
- b. Pulmonary fibrosis
- c. Angle-closure glaucoma**
- d. Heart failure
- e. Peptic ulcer disease

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

- a. For preparation of thick extracts
- b. To be used as ready-made medicines
- c. For preparation of tinctures
- d. For quick preparation of infusions and decoctions in pharmacy practice**
- e. For preparation of dry extracts

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

e. Contract of sale

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

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

587. Medicinal substances are introduced into multiphase ointments depending on their properties.

How to introduce novocaine (procaine) hydrochloride into a vaseline-lanolin base?

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

588. 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. Phenolphthalein
- d. Potassium chromate
- e. Ferroin**

589. Based on the medical certificate, a patient can receive financial assistance due to temporary disability. Financial assistance for temporary disability ~~textbf{CANNOT}~~ be provided:

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

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

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

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

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

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

593. 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. Cumulation
- b. Tolerance
- c. Sensitization
- d. Withdrawal syndrome
- e. Idiosyncrasy

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

- a. Dry residue
- b. Acid value and peroxide value
- c. Moisture content
- d. Particle size
- e. Purification methods

595. Pharmacy employees receive their salary payments twice a month. What should the cashier do, if a pay day coincides with a holiday?

- a. To pay the salaries 10 days earlier
- b. To pay the salaries one day earlier
- c. There are no regulations regarding payment of salaries in this case
- d. To pay the salaries on the holiday
- e. To pay the salaries after the holiday

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

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

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

598. 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. Blue
- c. Green
- d. Turquoise
- e. White

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

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

600. A 60-year-old patient, who had suffered a myocardial infarction, was prescribed acetylsalicylic

acid as an antiaggregant. Specify the optimal daily dosage of acetylsalicylic acid for antiaggregatory effect:

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

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

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

602. At what cost will protargol nasal drops be dispensed at a pharmacy if a pediatrician prescribes it for treatment of a 2-year-old child?

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

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

- a. Manufacturing
- b. Sales
- c. Information
- d. Procurement
- e. Human resources

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

- a. Acetone
- b. Ethanol
- c. Glycerine
- d. Dichloroethane
- e. Chloroform

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

606. A pharmacy supplies the surgical ward of a hospital. What document enables the dispensing chemist to supply the goods:

- a. Product revaluation notice
- b. Report on the movement of packaging
- c. Purchase order
- d. Receipt log book
- e. Consolidated register

607. Specify the fluid used to coat the forms for pouring of the suppositories with hydrophilic vehicles:

- a. Purified water
- b. Dimethylsulfoxide

c. Vaseline (petroleum jelly)

d. Glycerine

e. Glycerine-water solution

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

a. Amlodipine

b. Verapamil

c. Captopril

d. Propranolol

e. Hypothiazid (Hydrochlorothiazide)

609. 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 fruits

c. Leaves and seeds

d. Leaves and flowers

e. Roots and leaves

610. 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. Nicotinic acid

b. Salicylic acid

c. Ascorbic acid

d. Benzoic acid

e. Citric acid

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

a. Freshly prepared tannin solution

b. Saturated sodium chloride solution

c. Titrated sodium edetate solution

d. Titrated hydrochloric acid solution

e. Iodized potassium iodide solution

612. 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. Coriandrum sativum

b. Anethum graveolens

c. Foeniculum vulgare

d. Anisum vulgare

e. Carum carvi

613. An analytical chemist can quantitatively determine the thiamine bromide content in powders by means of:

a. Alkalimetry

b. Bromometry

c. Complexometric titration

d. Permanganometry

e. Nitritometric titration

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

a. A revenue and duties authority

b. The company itself

c. The Ministry of Finance

d. The National Bank of Ukraine

e. A statistics authority

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

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

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

- a. Alcohol solutions
- b. Oil solutions
- c. Water solutions
- d. Glycerine solutions
- e. Chloroform solutions

617. The personal qualities of the head of a pharmaceutical company are attractive to the subordinates who want to emulate their boss in everything. What form of power of the manager is observed in this situation?

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

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

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

- a. Lyophilization
- b. Stamping
- c. Pouring into moulds
- d. Hand-rolling
- e. Pressing

620. 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. Leaves
- b. Roots
- c. Seeds
- d. Flowers
- e. Grass

621. 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. Accounting form
- c. Cash order
- d. Payment order
- e. Cash register receipt

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

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

623. 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. Complexometric titration
- c. Cerimetry
- d. Permanganatometry
- e. Bromometry

624. 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. Fiscal cash receipt for the goods/services
- c. Cash book
- d. Transactions ledger
- e. Accompanying statement to the bag with cash

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

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

626. 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. Debt recovery from a person accountable
- c. Goods receipt from the supplier
- d. Receipt of low-value wearing goods
- e. Issuing money to be accounted for

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

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

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

629. 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. Butamirate
- b. Salbutamol
- c. Codeine phosphate
- d. Oxeladin
- e. Ambroxol

630. 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. Hypokalemia
- b. Dysbacteriosis
- c. Thrombus formation
- d. Hemorrhages
- e. Hyperkalemia

631. A pharmacist has prepared a solid dosage form - a compound powder. What technological operation is NOT a part of preparation process in this case?

- a. Dissolution
- b. Packing
- c. Comminution
- d. Dosing
- e. Mixing

632. Representatives of the family Solanaceae are widely used in medical practice as alkaloid-containing plants. Which representative is the source for production of semi-synthetic steroid hormones?

- a. Solanum tuberosum
- b. Solanum laciniatum
- c. Datura Stramonium
- d. Hyoscyamus niger
- e. Atropa belladonna

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

- a. Social responsibility
- b. Financial activity
- c. Manufacturing activity
- d. -
- e. Commercial activity

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

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

635. 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. Brokers
- b. Dealers
- c. Agents
- d. Consignees
- e. Commission agents

636. A medical facility located in Kyiv buys its diagnostic tools from a domestic manufacturer. What level of distribution channel is it?

- a. Three-level channel

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

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

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

638. 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

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

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

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

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

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

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

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

- a. Warning that self-medication can be harmful to health
- b. Naming and mentioning celebrities, movie and cartoon characters, competent authorities
- c. References to the cases of successful drug use
- d. Comparison with other medical products
- e. Reference to the drug as the most effective

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

- a. Pharmacy head manager
- b. Analyst
- c. Dispensing chemist

- d. Authorized representative
- e. Supplier pharmacist

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

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

645. 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. Economic
- b. Administrative
- c. Socio-psychological
- d. Technological
- e. -

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

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

647. 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. Marquis reagent
- c. Froehde reagent
- d. Vitali-Morin reagent
- e. Erdman reagent

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

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

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

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

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

e. Marketing research

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

652. 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. Any drugs registered for distribution in Ukraine
- c. Only drugs produced domestically
- d. Only imported drugs
- e. Only the drugs from the list of approved procurements for budget-financed healthcare facilities

653. 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. 3 months before the closure
- e. 1 month before the closure

654. A pharmacist has prepared suppositories with novocaine (procaine) hydrochloride using a rolling technique. The novocaine hydrochloride content is less than 5%. How is this substance introduced into the base in this case?

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

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

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

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

- a. 20% sodium bromide solution
- b. Tincture of valerian
- c. Simple syrup
- d. Purified water
- e. Potassium bromide

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

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

658. 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. Diclofenac sodium
- b. Methotrexate**
- c. Methylprednisolone
- d. Prednisolone
- e. Nimesulide

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

660. Adonis-derived drugs are popular cardiotonic agents. The stock of adonis herbal raw material is assessed by the method of:

- a. Permanent quadrates**
- b. Projective cover
- c. By eye
- d. Geodesic
- e. Model specimen

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

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

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

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

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

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

664. What is the purpose of injectable tablets?

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

665. The duty of a cash desk operator is to perform cash receipt and withdrawal transactions on the

grounds of the relevant cash orders. Select from the list below a receipt transaction.

- a. Withdrawing sales proceeds for the transfer to the current account
- b. Issuing a cash sum to be accounted for
- c. Payment for the goods purchased for the business needs
- d. Salary payments
- e. Receipt of funds for advance salary payments

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

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

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

668. 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. Phenolphthalein
- b. Tropeolin 00
- c. Mordant black
- d. Ammonium iron (III) sulfate
- e. Potassium chromate

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

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

670. 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. Acceptable admixtures
- c. Mineral admixtures
- d. Extractive values
- e. Ash values (Total ash)

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

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

672. A pharmaceutical factory produces soft dosage forms. What soft dosage form melts at the body

temperature?

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

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

- a. Metformin
- b. Glucose
- c. Butamide (Tolbutamide)
- d. Insulin
- e. Glibenclamid

674. 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. Social responsibility
- b. Industrial activity
- c. Charity
- d. Financial activity
- e. Commercial activity

675. 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

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

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

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

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

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

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

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

680. 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. Ofloxacin
- d. Amoxicillin
- e. Norfloxacin

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

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

682. 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. Dimethyl formamide
- b. Anhydrous acetic acid
- c. Sulfanilic acid
- d. Pyridine
- e. Concentrated sulfuric acid

683. 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

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

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

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

- a. Bromhexine
- b. Oxeladin
- c. Tripsin
- d. Acetylcysteine
- e. Sodium bicarbonate

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

- a. Angle of rotation

- b. Melting point
- c. Optical density
- d. Dynamic viscosity
- e. Refractive index

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

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

688. 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. Excessive
- b. Negative
- c. Declining
- d. Satisfied
- e. Absent

689. What reagent is used to identify sodium sulfate?

- a. Cobalt chloride
- b. Barium chloride
- c. Iron(III) chloride
- d. Calcium chloride
- e. Silver nitrate

690. 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. Sales stimulation
- b. Personal selling
- c. Direct marketing
- d. Public relations
- e. Merchandising

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

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

692. 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. 75%
- b. 25%
- c. 5%
- d. 20%
- e. 95%

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

- a. Phenolphthalein
- b. Methyl orange
- c. Xylenol orange
- d. Tropeolin 00

e. Methyl red

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

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

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

696. A woman with open tuberculosis is undergoing in-patient treatment in the tuberculosis clinic. What drug was prescribed by her physician for etiotropic treatment?

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

697. 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. Social
- d. Preliminary
- e. Financial

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

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

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

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

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

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

701. According to the State Pharmacopoeia of Ukraine monograph, alkalimetry should be used for the quantitative determination of the nicotinic acid. What is used as an indicator in this case?

- a. Potassium chromate
- b. Calconcarbonic acid
- c. Sodium eosinate
- d. Phenolphthalein**
- e. Methylene blue

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

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

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

- a. Sulfacil sodium
- b. Streptocide
- c. Norsulfazole**
- d. Soluble streptocide
- e. Sulfadimezinum (Sulfadimine)

704. When activated charcoal is included into the combined therapy, the sorption of other medicines:

- a. Increases
- b. Activates
- c. Decreases**
- d. Accelerates
- e. Remains unchanged

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

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

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

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

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

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

- a. Roots
- b. Bark**

- c. Infructescences
- d. Buds
- e. Flowers

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

- a. Non-harvested parts of the same plant
- b. Metallic objects
- c. Sand
- d. Soil particles
- e. Glass fragments

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

- a. Benzalkonium chloride, benzyl alcohol
- b. Citric acid, sodium phosphate salts
- c. Glycerine, dimethyl sulfoxide
- d. Sodium lauryl sulfate, tween emulsifiers
- e. Paraffin, spermaceti

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

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

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

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

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

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

- a. Essential oil glandules
- b. Glandular <<spots>>
- c. Essential oil cavities
- d. Glandular hairs
- e. Secretory cells

715. Considering thermolability of most animal-derived injection preparations, they are sterilized by means of:

- a. In autoclave chamber with high-pressure saturated steam
- b. Addition of buffer solutions
- c. High frequency current
- d. Ultrasound
- e. Filtration through membrane

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

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

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

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

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

- a. Commercial loan
- b. State loan
- c. Term loan
- d. Bank loan
- e. Prolonged loan

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

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

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

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

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

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

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

- a. Rolling
- b. Pouring

c. Pressing

d. Dispersion

e. Steeping

724. 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. Amoxicillin

b. Tetracycline

c. Norfloxacin

d. Gentamicin

e. Chloramphenicol

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

a. Clarithromycin

b. Amoxicillin/clavulanate

c. Gentamicin

d. Ciprofloxacin

e. Cefazolin

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

a. Cardiotonic

b. Detoxicant

c. Expectorant

d. Litholytic

e. Astringent

727. 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. 2 copies of F-1 form

c. F-3 form

d. F-1 and F-3 forms

e. F-1 form

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

a. Acidimetry in a non-aqueous medium

b. Alkalimetry

c. Photocolorimetry

d. Bromatometry

e. Nitritometry after alkaline hydrolysis

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

a. Length and quantity of the suppositories

b. Diameter and vehicle of the suppositories

c. Diameter and quantity of the suppositories

d. Diameter, length, and quantity of the suppositories

e. Quantity and vehicle of the suppositories

730. 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. 5 years

b. Indefinitely

c. 1 years

- d. 3 years
- e. 2 years

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

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

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

- a. Ninhydrin
- b. Aniline
- c. Diphenylamine
- d. Cyanogen bromide
- e. Pyridine

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

- a. Boric acid
- b. Salicylic acid
- c. Glutaminic acid
- d. Benzoic acid
- e. Acetylsalicylic acid

734. What technology was used by a pharmacist to make a starch solution?

- a. Dissolved it in cold water and heated
- b. Dissolved it in boiling water
- c. Mixed it with cold water, than poured the mixture into boiling water and boiled for 1-2 minutes
- d. Dissolved it in a vial for dispensing in freshly-distilled filtered purified water
- e. Mixed it with hot water and added cold water

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

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

736. 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. Synchromarketing
- b. Demarketing
- c. Remarketing
- d. Conversion marketing
- e. Stimulation marketing

737. 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. Formaldehyde
- b. Carbon(IV) oxide
- c. Hydrogen sulfide
- d. Ammonia
- e. Sulfur(VI) oxide

738. 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

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

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

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

- a. Subject to taxation
- b. Tax system
- c. Tax rate
- d. Tax concession
- e. Tax

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

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

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

- a. Horizontal integration
- b. Vertical integration
- c. Horizontal diversification
- d. Conglomerate diversification
- e. Growth strategy

743. 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. 3 months
- b. 5 years
- c. 6 months
- d. 3 years
- e. 2 years

744. 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. Officer of a local division of the state inspectorate for drug quality control
- b. Tax officer
- c. Employee appointed to this task by the head manager
- d. Pharmacist
- e. Head manager

745. 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. Spray
- c. Lozenges
- d. Suppositories**
- e. Tablets

746. 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. Nitrofural (Nitrofurazone)
- b. Benzocaine
- c. Theophylline monohydrate
- d. Sodium benzoate**
- e. Morphine hydrochloride

747. When pressing tablets, puncheons of a tabletting machine stick to the tablet surface. What technological error is most likely in this case?

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

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

- a. Manufacturing activity**
- b. -
- c. Commercial activity
- d. Financial activity
- e. Financial and credit activity

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

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

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

751. A pharmaceutical company produces mint tincture. Technological process of making this tincture requires it to be made:

- a. With 70% alcohol in 1:15 proportion
- b. With 48% alcohol in 1:2 proportion
- c. With 70% alcohol in 1:5 proportion
- d. With 70% alcohol in 1:10 proportion
- e. With 90% alcohol in 1:20 proportion**

752. 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. Nitroglycerine**
- b. Isosorbide dinitrate

- c. Nifedipine
- d. Bisoprolol
- e. Digoxin

753. 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. Zinc
- d. Magnesium
- e. Calcium

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

755. An analytical chemist determines potassium ions admixture in a medicinal substance with sodium tetraphenylborate according to the State Pharmacopoeia of Ukraine. What analytical effect would confirm the presence of this admixture?

- a. White opalescence
- b. Pink coloring
- c. Yellow coloring
- d. Brown coloring
- e. Blue coloring

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

- a. To avoid prolonged contact with overlaying suspension
- b. To speed up the process of applying the coating
- c. They are not durable enough
- d. To prevent them from adhesion to each other
- e. To improve their appearance

757. 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. Sodium bromide was dissolved in the tincture in a vial for dispensing
- c. Sodium bromide was mixed in a separate vessel with a part of the extract, than this mixture was added into the prepared tincture
- d. Concentrated solution was added into the prepared extract
- e. Dry substance was dissolved in the filtered extract in a stand

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

- a. To improve its chemical resistance
- b. To lower its melting temperature
- c. To increase its mechanical strength
- d. To increase its thermal resistance
- e. To change its color

759. 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. Hydrochloric acid
- b. Iodine monochloride

- c. Silver nitrate
- d. Potassium permanganate
- e. Cerium sulfate

760. 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. Azo dye formation
- b. Hydroxamic reaction
- c. Iodoform test
- d. <<Silver mirror>> reaction
- e. Lignin test

761. 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. Drowsiness
- c. Urinary retention
- d. Headache
- e. Dry cough

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

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

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

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

764. 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. Liberal
- c. Direct
- d. Collective
- e. Democratic

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

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

766. 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. Levomycin (Chloramphenicol)
- b. Streptomycin sulfate
- c. Sodium benzylpenicillin

- d. Erythromycin
- e. Biomycin

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

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

768. What substance is most often used as a vehicle in triturations?

- a. Lactose
- b. Starch
- c. Sucrose
- d. Glucose
- e. Talcum

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

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

770. What herbal raw material contains alkaloid glaucine that has a strong antitussive effect?

- a. Belladonna grass
- b. Vinca minor grass
- c. Chelidonium grass
- d. Glaucium flavum grass
- e. Macleaya grass

771. Most types of herbal raw materials are stored dry. However, for juice production the factories receive fresh herbal material. Name one such plant that is processed fresh:

- a. Althaea officinalis
- b. Plantago major
- c. Capsella bursa-pastoris
- d. Rosa canina
- e. Urtica dioica

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

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

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

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

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

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

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

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

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

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

777. 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 tarty. The fruits are up to 3 cm long, 1.5 cm in diameter, and are filled with hard small angular yellow nutlets. The nutlets and the inner surface of the fruits are covered with long and extremely coarse bristly down. This herbal raw material can be identified as:

- a. Fructus Rosae
- b. Fructus Ribis nigri
- c. Fructus Viburni
- d. Fructus Hippophaes
- e. Fructus Sorbi

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

- a. Acidimetry
- b. Complexometry
- c. Iodometry
- d. Bromatometry
- e. Nitritometry

779. An analytical quality control laboratory performs analysis of an ascorbic acid substance. What device must be used to determine its specific optical rotation?

- a. Polarimeter
- b. Refractometer
- c. Viscometer
- d. Spectrophotometer
- e. Hydrometer

780. 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. Macrolides
- b. Aminoglycosides
- c. Penicillins
- d. Fluoroquinolones
- e. Cephalosporins

781. 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. Dependence
- b. Tolerance
- c. Summation
- d. Cumulation
- e. Potentiation

782. The doctor has prescribed the patient an antispasmodic agent bendazol hydrochloride (Dibazol).

Based on its chemical structure, bendazol hydrochloride is a derivative of:

- a. Benzimidazole
- b. Purine
- c. Phenothiazine
- d. Indole
- e. Acridine

783. 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. Supply department
- b. Shipping department
- c. Stores development
- d. Finance department
- e. Marketing department

784. The Dobropharma pharmacy manager makes plans for standard stock of various groups of goods, based on their purpose. Convenience goods belong to the following group:

- a. Single delivery
- b. Seasonal accumulation
- c. Current demand
- d. Prior delivery
- e. Specific demand

785. 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. Diuretics
- b. Angiotensin-converting-enzyme inhibitors
- c. Ganglionic blockers
- d. Calcium channel blockers
- e. Imidazoline receptor blockers

786. What indicator is used in iodometry for quantitative determination of caffeine in caffeine and sodium benzoate?

- a. Eriochrome black
- b. Methyl orange
- c. Bromthymol blue
- d. Starch
- e. Potassium chromate

787. The pharmaceutical company directs all the efforts to the restoration of the range of endangered medicinal plants listed in the Red Book of Ukraine. What type of responsibility does the firm take on?

- a. Social
- b. Personal
- c. Administrative
- d. Legal
- e. Criminal

788. A 3-year-old child is intolerant to paracetamol. What antipyretic drug can be taken instead?

- a. Diclofenac sodium
- b. Acetylsalicylic acid
- c. Naproxen
- d. Nimesulide
- e. Ibuprofen

789. What parameter is measured using a drum friability tester during tablet quality control?

- a. Abrasion resistance
- b. Disintegration
- c. Impurities
- d. Uniformity of dosage
- e. Dissolution

790. Tosylchloramide sodium (chloramine) has a disinfecting effect due to the release of active chlorine in an acidic medium. What method is used to quantify it?

- a. Nitritometry
- b. Permanganatometry
- c. Iodometry
- d. Complexonometry
- e. Iodochlorometry

791. A patient complaining of stuffy nose, fatigability, and headache came to a dispensing chemist. What medicine should be recommended to treat stuffy nose in this case?

- a. Lactulose
- b. Paracetamol
- c. Dexamethasone
- d. Acyclovir
- e. Xylometazoline

792. A manufacturer plans to sell its new medicine directly to the consumers through its own network of pharmacies. What type of distribution channel is it?

- a. Direct distribution channel (zero channel)
- b. Two-level distribution channel
- c. One-level distribution channel
- d. Four-level distribution channel
- e. Three-level distribution channel

793. What drug is used to treat hyperthyroidism?

- a. Metformin
- b. Mercazolil (Thiamazole)
- c. Prednisolone
- d. Oxytocin
- e. Insulin

794. A pharmaceutical factory produces ointments. Name the stage of the manufacturing process that allows to obtain a uniform ointment:

- a. Homogenization
- b. Dispersion
- c. Mixing components with the vehicle
- d. Ointment concentrate production
- e. Vehicle production

795. A certain pharmaceutical company is focused on the manufacture of medicines, while the sales play only a secondary role. What is the company's main type of business activity in this case?

- a. Insurance
- b. Finances
- c. Leasing
- d. Consulting services
- e. Manufacture

796. Among various types of tablet external layers there are enterosoluble coatings. Where in the body are they dissolved?

- a. Stomach
- b. Intestine**
- c. Rectum
- d. Oral cavity
- e. Esophagus

797. During quantitative determination of ascorbic acid by means of iodometry the following should be used as an indicator:

- a. Starch**
- b. Murexide
- c. Diphenylcarbazone
- d. Bromphenol blue
- e. Phenolphthalein

798. 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. Cough**
- b. Tinnitus
- c. Nausea
- d. Abdominal pain
- e. Vomiting

799. 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. Market-oriented
- b. Regional
- c. Segment-oriented
- d. Product-oriented
- e. Functional**

800. 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. Productive
- d. Linear**
- e. Adaptive

801. The owner of a pharmacy network unilaterally decides to register its trade mark, based on his feeling that he makes the right choice. What type of managerial decision is it?

- a. Rational
- b. Intuitive**
- c. Adaptive
- d. Collective
- e. Collegial

802. What preparation has an antiemetic effect?

- a. Metoclopramide**
- b. Clarithromycin
- c. Aluminum phosphate
- d. Loperamide
- e. Sodium bicarbonate

803. A pharmaceutical company produces liquid dosage forms. What principle is used in rotary pulsation apparatus to obtain an emulsion?

- a. Ultrasonic dispersion
- b. Maceration
- c. Coacervation
- d. Mechanical dispersion**
- e. Solubilization

804. Concentrated solutions are used to speed up the preparation of mixtures. What volume of a 5% sodium bicarbonate solution (1:20) must be taken to prepare a mixture that contains 6.0 g of the medicinal substance?

- a. 7.5 mL
- b. 60 mL
- c. 30 mL
- d. 90 mL
- e. 120 mL**

805. Specify the isotonic concentration of a sodium chloride solution:

- a. 10.0%
- b. 1.0%
- c. 1.8%
- d. 0.9%**
- e. 5.0%

806. A pharmacist prepares a suspension with a hydrophobic substance. What stabilizer is necessary for this dispersion system?

- a. Methyl cellulose**
- b. Boric acid
- c. Glucose
- d. Nipagin (Methylparaben)
- e. Sodium chloride

807. To treat iron-deficiency anemia the following drug is usually prescribed:

- a. Corticosteroids
- b. Furagin (Furazidinum)
- c. Ferroplex**
- d. Vicasol (Menadione)
- e. Heparin

808. What is the minimum amount of boric acid that can be weighed on the BP-1 hand scales?

- a. 0.05 g
- b. 0.03 g
- c. 0.01 g
- d. 0.02 g**
- e. 0.04 g

809. What property of the tablet mass determines the most how fast a matrix hole of the tablet press machine is filled?

- a. Bulk density
- b. Fluidity (flowability)**
- c. Porosity
- d. Humidity
- e. Relative density

810. A pharmacist prepares a compound powder. What medicinal substance must be comminuted without adding an adjuvant liquid (alcohol or ether)?

- a. Camphor
- b. Streptocide (Sulfanilamide)
- c. Menthol
- d. Thymol
- e. Zinc oxide**

811. 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. Metoclopramide
- b. Meloxicam
- c. Metronidazole
- d. Metformin**
- e. Metoprolol

812. To replenish its fixed assets, the pharmacy made a decision to arrange a credit with the trading bank. What document must be concluded in writing between the creditor and the debtor in this case?

- a. Credit contract**
- b. Balance sheet
- c. License
- d. Auditor's conclusion
- e. Full material liability contract

813. 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**

814. Tussilago farfara leaves are a component of drugs that exhibit coating, expectorant, and softening effect. What class of bioactive substances determines such pharmacological characteristics of this raw material?

- a. Vitamins
- b. Phenolic glycosides
- c. Essential oils
- d. Saponins
- e. Polysaccharides**

815. Atropa belladonna grass extract is a component of compound antispasmodic drugs. Select such drug from the list:

- a. Olimetinium
- b. Bellasthesin**
- c. Solutan
- d. Urolesan
- e. Herbogastrine

816. What substance is a component of the powders enclosed in gelatin capsules?

- a. Ethacridine lactate**
- b. Magnesium oxide
- c. Glucose
- d. Dimedrol (Diphenhydramine)
- e. Streptocide (Sulfanilamide)

817. An analytical chemist has conducted a qualitative reaction to confirm the presence of a steroid ring in the prednisolone molecule. For this purpose the following reagent was used:

- a. Concentrated sulfuric acid**
- b. Acetic anhydride
- c. Copper tartrate reagent
- d. Phenylhydrazine sulfate
- e. Hydroxylamine hydrochloride

818. What pricing policy is used by the management of a pharmacy, if during the price formation for pharmaceutical products the main focus is the prices offered by the nearest pharmacies, rather than pharmacy's own expences or demand for the products?

- a. Tender pricing
- b. Demand-based pricing
- c. Breakeven pricing
- d. Competition-based pricing**
- e. Cost-based pricing

819. Clonidine hydrochloride is a salt of an organic base. What method is used for the quantification of this medicinal substance?

- a. Complexonometry
- b. Bromatometry
- c. Alkalimetry**
- d. Nitritometry
- e. Iodometry

820. 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<sup>o</sup>C with pressure at 1,0-1,1 atm
- b. Sterilization with flowing steam at 100<sup>o</sup>C
- c. Triple heating of solution to 40-60<sup>o</sup>C with 24-hour-long intervals in between for thermostating**
- d. Sterilization with high-frequency and microwave frequency current
- e. Sterilization with dry heat at 180-200<sup>o</sup>C for a lengthy period of time

821. 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. Probiotics**
- b. Expectorants
- c. Antispasmodics
- d. Antitussive drugs
- e. Mucolytic agents

822. A pharmacist needs to prepare eyedrops with pilocarpine hydrochloride. Specify the optimal isotonic agent in this case:

- a. Glucose
- b. Sodium chloride**
- c. Boric acid
- d. Sodium sulfate
- e. Sodium nitrite

823. What medicine is used for the symptomatic treatment of meteorism?

- a. Simethicone**
- b. Papaverine
- c. Drotaverine
- d. Almagel (Algeldrate + magnesium hydroxide)
- e. Platyphyllin

824. Phenyl salicylas can be identified by the smell of phenol that is produced when the following is added into the preparation:

- a. H<sub>2</sub>SO<sub>4</sub>**
- b. CuSO<sub>4</sub>
- c. CoCl<sub>2</sub>
- d. NaCl
- e. AgNO<sub>3</sub>

825. 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. Rifampicin**
- b. Isoniazid
- c. Benzylpenicillin (Penicillin G) sodium salt
- d. Alcoholic iodine solution

e. Ciprofloxacin

826. For what substance its dosing is based on the mass, when preparing liquid dosage forms?

a. Ammonia spirit-anise spirit drops

b. Elixir pectoralis

c. 30% hydrogen peroxide (Perhydrol)

d. Leonurus tincture

e. 1% citral alcohol solution

827. In its work, a pharmaceutical company combines ensuring its own profitability with meeting the needs of consumers and raising the standard of living in the society. What marketing management concept has the company chosen?

a. Socio-ethical marketing

b. Intensification of commercial efforts

c. Marketing

d. Production improvement

e. Product improvement

828. Genetically induced adverse reaction to a certain drug is caused by various enzyme defects.

Name this reaction:

a. Steal syndrome

b. Withdrawal syndrome

c. Rebound effect

d. Idiosyncrasy

e. Dysbiosis

829. Infuser apparatus is used by a pharmacy to prepare:

a. Ointments

b. Emulsions

c. Infusions and decoctions

d. Suspensions

e. Infusion solutions

830. Chloride of lime is identified by calcium cations after boiling with acetic acid in order to eliminate active chlorine. What reagent is used?

a. Magnesium sulfate

b. Ammonium molybdate

c. Sodium nitrite

d. Ammonium oxalate

e. Potassium chloride

831. When examining a substance with an ester group, you can conduct a reaction that produces:

a. Azo dye

b. Berlin blue

c. Diazonium salt

d. Iron(III) hydroxamate

e. Indophenol

832. To reduce business risks, a pharmaceutical company expands its business by entering new areas and industries that are unrelated to the drug manufacturing. Name this process.

a. Diversification

b. Intensification

c. Conglomeration

d. Modernization

e. Integration

833. The price of a medicine depends on many factors. Which of the listed below is an internal factor of price formation for a pharmaceutical manufacturer?

a. Middleman markup

- b. Demand for the product
- c. Customer preferences
- d. Pricing policy of the competitors
- e. Manufacturing costs

834. A patient with chronic heart failure, who has been taking cardiac glycosides, developed signs of glycoside intoxication. What antidote would be advisable in this case?

- a. Methionine
- b. Unithiol (DMPS)
- c. Protamine
- d. Naloxone
- e. Vicasol (Menadione)

835. Hypericum perforatum grass contains hypericin. What is the pharmacological effect of this substance?

- a. Analgesic
- b. Antiasthmatic
- c. Antidepressant
- d. Expectorant
- e. Anticonvulsant

836. A man came to a pharmacist and asked to recommend him a herbal tonic and adaptogen. What herbal raw material has such a pharmacological effect?

- a. Pumpkin seeds
- b. Fennel fruits
- c. Schisandra seeds
- d. Flax seeds
- e. Silybum fruits

837. The presence of a primary aromatic amino group in sulfanilamide structure can be confirmed with a reaction that produces:

- a. Murexide
- b. Diazonium salts
- c. Fluorescein
- d. Iodoform
- e. Azo dye

838. 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. Thiochrome test
- c. Maltol test
- d. Ninhydrin test
- e. Biuret test

839. Senna (cassia) foliage contains anthracene derivatives. Their presence can be confirmed by qualitative reaction with:

- a. Alkali
- b. Fehling's reagent
- c. Molisch's reagent
- d. Iron ammonium alum
- e. Iron (II) sulfate

840. What medicinal substance during interaction with a silver nitrate solution forms a white precipitate that quickly colors yellowish and then turns black?

- a. Sodium bromide
- b. Sodium iodide

- c. Hydrogen peroxide
- d. Sodium chloride
- e. Sodium thiosulfate

841. A 45-year-old man has been taking long-acting nitrates twice a day for a year. Currently the decrease in effectiveness of the pharmacotherapy is being observed. What side-effect can be suspected in the first place?

- a. Development of nitrate tolerance
- b. Progressing coronary atherosclerosis
- c. Progressing ischemic heart disease
- d. Impairment of coronary circulation
- e. Myocardial infarction

842. 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. Alkaloids
- b. Anthracene derivatives
- c. Flavonoids
- d. Vitamins
- e. Tannins

843. A pharmacy prepares 10% sodium chloride injection solution. What sterilization would be optimal in this case?

- a. Autoclave chamber with high-pressure saturated steam
- b. Irradiation sterilization
- c. Sterile filtration through membrane
- d. Gas sterilization
- e. Dry-heat sterilization

844. Mandatory payroll deductions are withheld from the salary of pharmacy workers. Specify the tax rate on income of natural persons:

- a. 18%
- b. 0%
- c. 15%
- d. 20%
- e. 5%

845. In what capacity is benzyl alcohol used as a component of solutions for parenteral administration?

- a. Buffer solution
- b. Antioxidant
- c. pH regulator
- d. Antimicrobial preservative
- e. Isotonicity regulator

846. Pharmaceutical factory received a batch of Althaea roots. What reagent should be used in histochemical test for slime production in the course of qualitative analysis?

- a. 1% ammonium iron(III) sulfate solution
- b. Sudan III solution
- c. Alcoholic solution of methylene blue
- d. Dragendorff reagent
- e. 1% phloroglucinol solution

847. Nitroxoline with sodium hydroxide solution produces:

- a. Orange-red coloration
- b. Yellow precipitate
- c. White precipitate
- d. Green-black coloration
- e. Violet coloration

848. 50 ml of injection solution has been made in a pharmacy. Specify the process of solution sterilization:

- a. 140<sup>o</sup>C - 12 minutes
- b. 120<sup>o</sup>C - 8 minutes
- c. 110<sup>o</sup>C - 15 minutes
- d. 160<sup>o</sup>C - 15 minutes
- e. 180<sup>o</sup>C - 30 minutes

849. Representatives of two pharmaceutical companies - partners from Ukraine and China - for some time had communication problems due to the use of words and verbal symbols with different meanings. What caused the deformation of the communication process and hindered the exchange of information in this case?

- a. Nonverbal barriers
- b. Poor feedback
- c. Lack of understanding of the information's importance
- d. Psychological distance
- e. Semantic barriers

850. When preparing a solution, the pharmacist used an additional technique - grinding in a mortar with water. What substance typically requires this technique?

- a. Furacilin (Nitrofural)
- b. Boric acid
- c. Silver nitrate
- d. Calcium gluconate
- e. Copper sulfate

851. A woman suddenly developed an angina pectoris attack. To arrest the attack, she took a medicine that caused her a severe headache, facial hyperemia, and tachycardia. Such side effects are characteristic of the following group of drugs:

- a. Beta-adrenergic antagonists
- b. Nitrates
- c. Antispasmodics
- d. Calcium channel blockers
- e. Alpha-adrenergic agonists

852. Pharmacy premises can be divided into service rooms and workrooms. Name the workroom for storage of medical products:

- a. Material storage room
- b. Distillation room
- c. Shop floor
- d. Washing room
- e. Aseptic block

853. 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. Ultrasound exposure
- d. Extraction from one liquid using another
- e. Electrolyte action

854. There are various groups of adjuvants used in tablet production. What is the function of excipients?

- a. To make pills of a certain weight
- b. To create necessary adhesive force between particles
- c. To improve the taste
- d. To improve the flowability of granular material
- e. To improve disintegration

855. 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. Cocoa butter
- b. Sunflower oil
- c. Olive oil
- d. Castor oil**
- e. Flaxseed oil

856. A formaldehyde solution was received for analysis. What reagent should be used to identify this substance?

- a. Tartaric acid
- b. Benzoic acid
- c. Sulfuric acid
- d. Acetic acid
- e. Chromotropic acid**

857. The following herbal raw material is a source of tannin in pharmaceutical manufacture:

- a. Rhizomata Bistortae
- b. Folium Cotini coggygriae**
- c. Rhizomata Bergeniae
- d. Fructus Viburni
- e. Rhizomata et radix Sanguisorbae

858. An analytical pharmacist of the quality control department analyzes the phenol substance. What method of quantification is used for this purpose?

- a. Bromatometry**
- b. Argentometry
- c. Permanganatometry
- d. Mercurimetry
- e. Complexonometry

859. All business transactions at a pharmacy must be documented. What type of cash operation must be recorded with a receipt cash order?

- a. Salary payments
- b. Advance salary payments
- c. Revenue of the pharmacy**
- d. Transfer of the revenue to the bank account
- e. Issuing cash sums to be accounted for

860. According to the State Pharmacopoeia of Ukraine, an analytical chemist determines quantitative content of potassium acetate by means of acidimetry in non-aqueous medium. Name the volumetric solution in this case:

- a. Iodine
- b. Potassium bromate
- c. Sodium hydroxide
- d. Perchloric acid**
- e. Sodium nitrite

861. 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. Promotion
- b. Recruitment
- c. -
- d. Staff turnover**
- e. Staff rotation

862. What topical antiviral agent should be recommended to the patient with herpetic lesions on the

lips?

- a. Aflubin
- b. Arbidol (Umifenovir)
- c. Acyclovir
- d. Anaferon
- e. Amizon (Enisamium iodide)

863. 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. Dissolution
- c. Maceration
- d. Mass transfer
- e. Extraction of primary juice

864. 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. Psychotropic substances
- b. Potent substances
- c. Narcotic substances
- d. Precursors
- e. Toxic substances

865. 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. Ash bark
- b. Oak bark
- c. Buckthorn bark
- d. Birch bark
- e. Willow bark

866. Information on the pharmacy's actual stock of narcotic drugs, psychotropic substances, and precursors must be checked against the balance records made in the relevant logbook. How often must it be done?

- a. -
- b. Quarterly
- c. Annually
- d. Monthly
- e. Daily

867. According to the State Pharmacopoeia of Ukraine, the tablets taken internally can be classified into several different types. The pulsatile release tablets can be classified as:

- a. Dispersible tablets
- b. Effervescent tablets
- c. Soluble tablets
- d. Modified-release tablets
- e. Chewable tablets

868. During storage, suspension instability manifests itself as:

- a. Flocculation of particles
- b. Change of particles shape
- c. Caking of particles
- d. Sedimentation of particles
- e. Dissolution of particles

869. Vinblastine and Vincristine demonstrate antitumor activity. Name the herbal raw material used in production of these medicines:

- a. Folia Berberidis

b. Herba Vincae minoris

c. Herba Selaginis

d. Folia Catharanthi rosei

e. Rhizomata Nupharis lutei

870. If potassium salts are put into the colorless flame of a gas burner, the flame colors:

a. Red

b. Violet

c. Yellow

d. Green

e. Brick-red

871. Achillea grass is harvested during a certain stage of plant growth. Name this stage:

a. During the fruiting

b. During mass flowering

c. During the budding

d. During the shoot growth

e. Before the flowering

872. Oblong tablets are called:

a. Forte tablets

b. Capsules

c. Dragee

d. Pellets

e. Caplets

873. How long should the pharmacy keep a receipt for Morphin-ZN tablets, package №50?

a. Three years, not counting the current one

b. The receipt form is not kept by the pharmacy

c. One year, not counting the current one

d. Five years, not counting the current one

e. One month, not counting the current one

874. 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. Pyridoxine

b. Nicotinic acid

c. Thiamine

d. Cyanocobalamin

e. Riboflavin

875. What is the driving force of the diffusion process during the extraction of a herbal raw material?

a. Brownian motion of the particles

b. High temperature of the extractant

c. High polarity of the extractant

d. Different concentration of the active substance in the raw material and extractant

e. Presence of a film membrane

876. 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. Metacycline

b. Riboxin (Inosine)

c. Nitroglycerine

d. Naphthyzin (Naphazoline)

e. Panangin

877. A pharmacy supplies with medicines various groups of patients. Children of what age group

receive drugs for free during their outpatient treatment?

- a. Under 3 years of age
- b. Under 10 years of age
- c. From 3 to 6 years of age
- d. Under 6 years of age
- e. Under 16 years of age

878. "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. Populus nigra buds
- d. Taraxacum roots
- e. Viburnum bark

879. During stock-taking at a pharmacy, a surplus of material goods was discovered. What should the inventory committee do with the discovered surplus?

- a. Conducting an official investigation
- b. Elimination
- c. Writing off
- d. Recording as received
- e. Confiscation

880. The management of a pharmaceutical company uses F. Herzberg's two-factor theory of motivation. What is this theory based on?

- a. The need for protection
- b. The need for safety
- c. Hygienic and motivational factors
- d. The need for existence, connection, growth
- e. The need for power, success, and affiliation

881. 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. Cashier's check
- b. Cash withdrawal order
- c. Cash receipt order
- d. Payment order
- e. Bank statement

882. Direct argentometric titration using the Mohr method can be used for quantification of sulfathiazole (norsulfazazole). What indicator is used in such analysis?

- a. Bromophenol blue
- b. Potassium chromate
- c. Tropeolin 00
- d. Starch
- e. Methylene blue

883. 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. Digitalis lanata
- b. Convallaria majalis
- c. Strophanthus kombe
- d. Erysimum canescens
- e. Adonis vernalis

884. 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. Hypertensive crisis

- b. Migraine attack
- c. Exertional angina pectoris attack
- d. Acute conjunctivitis
- e. Cervical osteochondrosis

885. Name the type of suppositories that are made from aqueous suspensions and undergo deep freezing.

- a. Multi-layered
- b. Hollow
- c. Dyed
- d. Lyophilized**
- e. Porous

886. 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. Technological
- b. Economical
- c. Legal
- d. Sociocultural**
- e. Political

887. 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. Indicative price
- b. Fixed price
- c. Contract price
- d. Free-of-control price
- e. Controlled price**

888. An analytical pharmacist analyzes a chloramphenicol (levomycetin) substance and uses the specific absorption parameter value to calculate its quantitative content. What method was used for quantification in this case?

- a. Refractometry
- b. Spectrophotometry**
- c. Photocolorimetry
- d. Polarography
- e. Polarimetry

889. 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. *Mentha piperita*
- b. *Melissa officinalis*
- c. *Thymus serpyllum*
- d. *Rubia tinctorum***
- e. *Sambucus nigra*

890. A pharmacy offers to its customers a chance to measure their blood pressure. What type of goods is it?

- a. Unsought goods
- b. Service**
- c. Specialty goods
- d. Nondurable goods
- e. Convenience goods

891. A pharmacy prepares extemporaneous drugs. Who sets the retail prices and labor charges for these pharmacy-made medicines?

- a. Inspectorate for medicine quality control
- b. Regional state administration
- c. The Ministry of Health
- d. Pharmacy**
- e. Local council

892. Dried Vaccinium berries can be used as an astringent. The astringent properties of this herbal raw material are caused by the presence of certain substances. Name these substances.

- a. Alkaloids
- b. Polysaccharides
- c. Flavonoids
- d. Tannins**
- e. Iridoids

893. The <<Violet>> pharmacy chain operates in the pharmaceutical market for over 20 years. In difficult market environment, the company's management actively uses elements of crisis management, diversification, and attraction of investments. What component of the successful activity of the pharmaceutical organization does the company provide?

- a. Survival**
- b. Effectiveness
- c. Productivity
- d. Practical implementation of management decisions
- e. Efficiency

894. A pharmacy has received a formulation for eye drops with protargol (silver proteinate). What substance will be used to make the eye drops isotonic?

- a. Sodium chloride
- b. Boric acid
- c. No isotonation is needed**
- d. Sodium nitrate
- e. Sodium sulfate

895. A pharmaceutical company plans to launch the production of a new medicine. What stage of product development includes making the cost estimates for its manufacturing and sales and preliminary calculations of the price and planned profits?

- a. Commercial manufacturing
- b. Filtration of the ideas
- c. Generation of the ideas
- d. Test marketing
- e. Economic analysis**

896. 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. Price index
- b. Profitability
- c. Turnover
- d. Labor productivity**
- e. Stock of goods

897. 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. Accelerated absorption of iron preparations
- b. Prolonged action of iron preparations
- c. Formation of chelate complexes that cannot be assimilated into the body**
- d. Increased activity of iron preparations
- e. Accelerated clearance of iron preparations

898. Powder moisture content affects its:

- a. Solubility
- b. Particle size
- c. Flowability
- d. Particle shape
- e. Homogeneity

899. The herbal raw material of a foxglove is a source, from which cardiotonic agents are obtained.

What organs of the *Digitalis purpurea* are harvested as a herbal raw material?

- a. Rhizomes
- b. Seeds
- c. Leaves
- d. Roots
- e. Fruits

900. A 52-year-old patient, who takes heparin, developed signs of the drug overdose. What antidote should be used in this case?

- a. Protamine sulfate
- b. Acetylcysteine
- c. Potassium chloride
- d. Naloxone
- e. Unithiol

901. 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

902. What minimum amount of a toxic substance can be weighed on one-gram hand scales?

- a. 0.03 g
- b. 0.02 g
- c. 0.04 g
- d. 0.1 g
- e. 0.05 g

903. Powders made with a certain medicinal substance need to be prepared at a separate workplace, using separate scales and mortar. Name this substance:

- a. Magnesium oxide
- b. Zinc oxide
- c. Xeroform (bismuth tribromphenolate and bismuth oxide complex)
- d. Glucose
- e. Ascorbic acid

904. 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. Disbursement cash order
- b. Cashier's check
- c. Expense invoice
- d. Receipt for issuing money
- e. Profit invoice

905. *Centaurium erythraea* grass increases appetite and is a component of herbal teas for stomach.

What active substance causes this effect of the herbal raw material?

- a. Simple phenols
- b. Iridoids
- c. Alkaloids
- d. Flavonoids

e. Saponins

906. 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. Coumarins
- b. Tannins**
- c. Anthracene derivatives
- d. Flavonoids
- e. Essential oils

907. 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 thrice in a week
- c. No less than twice in a month
- d. No less than twice in a week
- e. No less than once in a shift**

908. 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. Oxacillin
- c. Chloramphenicol
- d. Ampicillin**
- e. Cefazolin

909. What is the duration of the leave due to pregnancy and childbirth?

- a. 126 calendar days**
- b. 56 calendar days
- c. 59 working days
- d. 70 working days
- e. 90 calendar days

910. Codeine is used as a cough-depressant. What herbal raw material contains this alkaloid?

- a. Pods of opium poppy**
- b. Celandine grass
- c. Grass of common periwinkle
- d. Grass of plume poppy
- e. Tea leaves

911. Natural penicillins are unstable at high temperatures and quickly break down in alkaline and acidic environments. What cycle causes such chemical properties of natural penicillins?

- a. Phenothiazine
- b. beta-lactam**
- c. Quinoline
- d. Furan
- e. Pyridine

912. A patient with severe progression of bronchial asthma has been taking an inhalation corticosteroid for a long time to relieve asphyxia attacks. What side effect is the most likely to develop in this case?

- a. Osteoporosis
- b. Oral candidiasis**
- c. Osteoarthritis
- d. Cushing's syndrome
- e. Steroid diabetes

913. 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 medical products to outpatients
- c. Dispensing medicines according to outpatient prescriptions
- d. Dispensing over-the-counter medicines to the people
- e. Dispensing prescription medicines to the people

914. To improve iodine solubility in the purified water, iodine must be:

- a. Dispersed with glycerine
- b. Comminuted with alcohol
- c. Dissolved in the saturated solution of potassium iodide
- d. Dissolved in the boiling water
- e. Reduced to fine powder

915. Bioactive substances of this plant have secretolytic, antispasmodic, antiflatulent, and slight diuretic effect. Its essential oil is used in making of gripe water. What plant is it?

- a. Betula pendula
- b. Calendula officinalis
- c. Crataegus sanguinea
- d. Tanacetum vulgare
- e. Foeniculum vulgare

916. What solution should be used by an expert at the laboratory of the pharmaceutical product certification center to identify the medicines that contain potassium ions?

- a. Sodium cobaltinitrite
- b. Magnesium sulfate
- c. Barium chloride
- d. Sodium hydroxide
- e. Ammonium oxalate

917. A woman at the third trimester of her pregnancy fell ill with pneumonia. A doctor prescribed her a fluoroquinolone. What negative effect can it have on the fetus?

- a. Chondrotoxic
- b. Neurotoxic
- c. Hepatotoxic
- d. Nephrotoxic
- e. Hematotoxic

918. Phospholipids are used in medicine in production of hepatoprotectors. What oil is a source of phospholipids?

- a. Oleum Cucurbitae
- b. Oleum Ricini
- c. Oleum Sojae
- d. Oleum Lini
- e. Oleum Amygdalarum

919. A 25-year-old man is diagnosed with acute pyelonephritis of moderate severity. What drugs should be prescribed for etiotropic therapy?

- a. Glucocorticoids
- b. Nonsteroidal antiinflammatory drugs
- c. Antiarrhythmic drugs
- d. Antimicrobial agents
- e. Anticholinesterase drugs

920. A doctor prescribed the drug simvastatin to the patient to correct hyperlipidemia. Why should the selected daily dose be taken once in the evening?

- a. Catabolism rate of low-density lipoproteins increases
- b. Absorption of the drug increases at night

- c. Risk of myopathy decreases
- d. Receptor sensitivity to low-density lipoproteins increases
- e. Cholesterol biosynthesis occurs mainly at night

921. Capsaicin is the main active substance of Capsicum annuum. It belongs to the following class of bioactive substances:

- a. Flavonoids
- b. Alkaloids
- c. Iridoids
- d. Anthracene derivatives
- e. Phenolic compounds

922. 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. -
- b. Pharmacy management
- c. Tax Inspectorate
- d. Local authorities
- e. Chief physician

923. 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. Caffeine monohydrate
- b. Quinine sulfate
- c. Scopolamine hydrobromide
- d. Pachycarpine hydroiodide
- e. Codeine phosphate

924. 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. Turnover of goods wages
- b. Cost price of products liquidity
- c. Profit turnover of goods
- d. Turnover of goods cost price of products
- e. Liquidity solvency

925. A pharmacy sells various medicines. What medicine is a subject to strict accounting in a special inventory log?

- a. Microfollin (Ethinylestradiol), tablets
- b. Gentamicin sulfate
- c. Tramadol, tablets
- d. Retabolil (Nandrolone)
- e. Hydrocortisone acetate

926. Thymus serpyllum grass is harvested in Ukraine. At what stage of plant growth is this herbal raw material harvested?

- a. Before the flowering
- b. During the flowering stage
- c. After harvesting the fruits
- d. When the fruits are ripe
- e. Before the formation of green fruits

927. The addition of preservatives and stabilizers is prohibited, when making the following dosage forms:

- a. Dosage forms for newborns
- b. Emulsions
- c. Suspensions
- d. Ophthalmic dosage forms

e. Infusions

928. A pharmacist prepares a vaseline-based ointment. The vehicle was heated to 40<sup>o</sup>C) What substance was introduced into the heated vehicle?

- a. Camphor
- b. Vinilin (polyvinyl butyl ether)
- c. Benzoic acid
- d. Streptocide
- e. Anesthesin

929. 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 over-the-counter drugs
- c. Sale of extemporal dosage forms
- d. Sale to other organizations for commercial use
- e. Sale of drugs to chronically ill patients

930. Bilitrast is an X-ray contrast substance. What reagent can confirm the presence of phenolic hydroxyl in its molecule?

- a. Silver nitrate solution
- b. Iodine dissolved in potassium iodide
- c. Alcoholic iodine solution
- d. Hydrochloric acid solution
- e. Iron(III) chloride solution

931. A pharmaceutical company develops the manufacture of new products. What part of the production procedures contains the description of the end product and lists its physical and chemical properties?

- a. Information materials
- b. Characteristics of the raw stock, materials, and intermediate products
- c. Characteristics of the end product
- d. Description of the manufacturing process
- e. Characteristics of the auxiliary raw stock and materials

932. 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 inserts
- b. Eye drops
- c. Eye lotions
- d. Eye sprays
- e. Eye ointments

933. A pharmaceutical warehouse received a herbal raw material that consists of "cones" with loose scales that are attached to a firm twig with or without fruits. Its collective fruits are pale green, fragrant, and bitter. Name the plant from which this herbal raw material was harvested:

- a. Olea europaea
- b. Alnus incana
- c. Humulus lupulus
- d. Juniperus communis
- e. Rubus idaeus

934. 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. Long-term liabilities
- b. Non-current assets
- c. Assets

- d. Current liabilities
- e. Equity capital

935. When preparing compound powders, a pharmacist used the "three-layer" method. Which one of the listed substances is a dye?

- a. Sulfur
- b. Streptocide (Sulfanilamide)
- c. Ethacridine lactate
- d. Camphor
- e. Protargol

936. What substances are used as leaveners in <<effervescent>> tablets?

- a. Aerosil (fumed silica), polysorbate 80
- b. Agar agar, alginic acid
- c. Sodium bicarbonate, agar agar
- d. Starch, alginic acid
- e. Mixtures of sodium bicarbonate with tartaric or citric acid

937. Galenical preparations include:

- a. Aerosols
- b. Granules
- c. Spansules
- d. Tinctures
- e. Capsules

938. A 43-year-old patient was delivered to an admission room with renal colic attack. What group of drugs would be the most effective during the attack?

- a. Antacids
- b. Antibiotics
- c. Cholagogues
- d. Hepatoprotectors
- e. Antispasmodics

939. Inulin improves digestion and has a positive effect on carbohydrate metabolism. What plant is used as a source of inulin?

- a. Althaea officinalis
- b. Astragalus dasyanthus
- c. Helianthus tuberosus
- d. Brassica juncea
- e. Hypericum maculatum

940. 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. Starch
- d. Phenol red
- e. Phenolphthalein

941. What group of ointment bases vaseline (petroleum jelly) belongs to?

- a. Hydrophilic bases
- b. Silicone bases
- c. Hydrophobic bases
- d. Adsorption bases
- e. Diphylic (amphiphilic) emulsion bases

942. What indicator of the pharmacy's financial performance is determined by the volume of sales, where the income from sales is equal to the expenses of the pharmacy?

- a. Markup level

- b. Goods turnover
- c. Breakeven point
- d. Profit
- e. Profitability

943. A 6-year-old child developed pneumonia and was prescribed an antibiotic for its treatment. After the treatment the child's hearing deteriorated. What drug could have caused this complication?

- a. Azithromycin
- b. Gentamicin
- c. Penicillin
- d. Ampicillin
- e. Ceftriaxone

944. 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. Payment orders
- b. Payroll records
- c. Cash deposit and cash withdrawal receipts
- d. Transactions log book
- e. Invoices

945. 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. Business expansion
- c. Organization profitability
- d. Organization culture
- e. Product diversification

946. What medicine is used for anesthesia and cannot be prescribed to outpatients, according to Decree №360?

- a. Metoprolol
- b. Sodium thiopental
- c. Suprastin (Chloropyramine)
- d. Anaesthesia (Benzocaine)
- e. Midecamycin

947. The director of a pharmaceutical company is engaged in strategic planning. What is the final stage of this process?

- a. Evaluation and analysis of the external environment
- b. Choosing a strategy
- c. Strategy evaluation
- d. Formulation of the mission
- e. Implementation of the strategic plan

948. When pressed, tablets stick to the tablet press. Why such adhesion occurs?

- a. Excessive moisture of the tablet substance and high pressure
- b. Inadequate flowability of the tablet substance
- c. Lamellar crystals in the tablet powder
- d. Heterogeneity of the granulated material
- e. High specific density of the powders

949. What medicinal substance has an imidazole fragment in its structure?

- a. Phenazone
- b. Thiamine bromide
- c. Pilocarpine hydrochloride
- d. Nicotinic acid
- e. Nitrofural

950. A pharmacy has received a receipt for preparation of a dermatological ointment with a non-specified vehicle. What vehicle should be used in this case?

- a. Soap-glycerine base
- b. Lanolin
- c. Vaseline
- d. Vaseline and lanolin
- e. Gelatin-glycerine gel

951. Sanguisorba officinalis herbal raw material contains tannins. What method must be used to determine their content according to the State Pharmacopoeia of Ukraine?

- a. Permanganometry
- b. Spectrophotometry
- c. Chromatography
- d. Nephelometry
- e. Photoelectrocolorimetry

952. Medicinal substance had been received for chemical analysis. Biuret test was performed for identification. Name this substance:

- a. Iodoform
- b. Benzoic acid
- c. Diphenhydramine
- d. Dipyrone (Metamizole)
- e. Bromisoval

953. An analytical chemist investigates a 3% hydrogen solution. What reagent is recommended by the State Pharmacopoeia of Ukraine for identification of this substance?

- a. Sodium chloride
- b. Magnesium sulfate
- c. Calcium chloride
- d. Zinc oxide
- e. Potassium chromate

954. 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 immediately without cooling
- b. Decoction is made and filtered after complete cooling
- c. Infusion is made and acidified with hydrochloric acid
- d. Infusion is made in a slightly alkaline medium
- e. Infusion is made by means of cold maceration

955. A pharmacist prepares suppositories by pouring. Name the coefficient for substitution of fatty vehicle with glycerinated gelatin vehicle:

- a. 1.20
- b. 1.11
- c. 1.25
- d. 1.31
- e. 1.21

956. How long must a pharmacy keep its logbooks with the records about the balance of narcotic drugs, psychotropic substances, and precursors?

- a. 3 years
- b. 1 year after the current one
- c. 5 years
- d. 7 years after the current one
- e. 2 years after the current one

957. According to the State Pharmacopoeia of Ukraine quantitative content of salicylic acid is to be determined by means of:

- a. Acidimetry

- b. Alkalimetry
- c. Argentometry
- d. Nitritometric titration
- e. Complexometric titration

958. Polyethylene oxide base belongs to the following group:

- a. Hydrophobic
- b. Emulsion
- c. Amphiphilic
- d. Fat
- e. Hydrophilic

959. 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. Simethicone
- c. Magnesium-containing drugs
- d. Ranitidine
- e. Calcium carbonate

960. A pharmaceutical factory produces tablets of sodium chloride. What is the method of their production?

- a. Direct compression with the addition of excipients
- b. Direct compression without additional substances
- c. Wet granulation prior to compression
- d. Dry granulation prior to compression
- e. Moulding

961. What herbal drug produced from alkaloid-containing raw materials can be recommended for neurasthenia, insomnia, menopausal disorders?

- a. Glaucine hydrochloride
- b. Ergotamine
- c. Novopassit
- d. Securinine nitrate
- e. Vinblastine

962. What department of a pharmaceutical wholesaler analyzes the demand for medicines and implements measures to stimulate their sales?

- a. Automated accounting
- b. Procurement
- c. Marketing
- d. Storage
- e. Transport

963. The ampoule workshop of a factory produces a 5% oil-based solution of tocopherol acetate for injections. What filling technique should be used to fill the ampoules with this solution?

- a. Vapor condensation
- b. Vacuum
- c. Syringe
- d. Syringe and vapor condensation
- e. Syringe and vacuum

964. For the treatment of cystitis, the doctor prescribed the patient a herbal drug. This drug is used in cases of acute and chronic infectious diseases of the kidneys and bladder. What herbal raw material that contains iridoids and xanthones is a component of this drug?

- a. Equisetum arvense grass
- b. Birch leaves
- c. Centaurium grass
- d. Vaccinium vitis-idaea leaves

e. Centaurea cyanus flowers

965. An analytical pharmacist performs the express analysis of anti-inflammatory eye drops containing potassium iodide. What method is used for quantification of the active substance?

- a. Acidimetry
- b. Argentometry**
- c. Alkalimetry
- d. Nitritometry
- e. Complexonometry

966. A pharmacist needs to add a stabilizer to prepare an atropine sulfate solution for injections.

What stabilizer would the pharmacist choose for this purpose?

- a. Ascorbic acid
- b. Sodium metabisulfite
- c. Sodium bicarbonate
- d. Hydrochloric acid**
- e. Sodium hydroxide

967. 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. Political
- b. Economic
- c. Technological
- d. Environmental and ecological
- e. Socio-demographic**

968. 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. 3 years**
- e. 6 months

969. Various types of dryers can be used for granule dehumidification. Specify the type of "СП-30" dryer:

- a. Silica gel dryer
- b. Infrared dryer
- c. Forced air dryer
- d. Fluidized bed dryer**
- e. Freeze dryer

970. A pharmaceutical company produces a medicine under the brand name "Corglyconum". What herbal raw material is used in preparation of this drug?

- a. Lily-of-the-valley grass**
- b. Wormwood grass
- c. Dandelion roots
- d. Plantain foliage
- e. Buckthorn bark

971. At the end of each month a pharmacy accountant draws up a balance. What indicator characterizes liabilities of a pharmaceutical company?

- a. Circulating assets
- b. Accounts receivable
- c. Reserves and expenses
- d. Equity capital**
- e. Work-in-process inventory

972. 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. Ninhydrin
- b. 2,4-Dinitrochlorobenzene
- c. Cyanogen bromide
- d. Concentrated ammonia
- e. 2,4-Dinitrophenylhydrazine

973. What hypotensive drug is an agent of choice for the patients suffering from arterial hypertension with concomitant type I diabetes mellitus?

- a. Lisinopril
- b. Carvedilol
- c. Hydrochlorothiazide
- d. Atenolol
- e. Labetalol

974. 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. Steroidal saponins
- b. Fatty oils
- c. Cardiac glycosides
- d. Alkaloids
- e. Thioglycosides

975. 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. Budesonide
- b. Ipratropium bromide
- c. Acetylcysteine
- d. Oxeladin
- e. Fenoterol

976. What should be used by a dispensing chemist-analyst for identification of bismuth-containing medicinal substances?

- a. Potassium permanganate solution
- b. Cobalt nitrate solution
- c. Thiourea solution
- d. Iron(III) sulfate solution
- e. Beta-naphthol solution

977. 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. Thermal stability
- b. Low solubility in water
- c. Thermolability
- d. Poor solubility in water
- e. Volatility

978. Which of the following pricing factors of a manufacturing pharmaceutical enterprise is internal?

- a. Expenses
- b. Consumers
- c. Competitors
- d. Participants in sales channels
- e. State regulation of prices

979. 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. Salt solutions based on iso- and hypotonic sodium chloride solutions
- b. Xylometazoline preparations
- c. Beclomethasone preparations
- d. Cromoglicic acid preparations
- e. Essential oil-based preparations

980. 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. Famotidine
- c. Ranitidine
- d. Bismuth subcitrate
- e. Omeprazole

981. A pharmaceutical company produces galenic preparations. These preparations contain:

- a. Smell-correcting agents
- b. A sum of active substances
- c. Taste-correcting agents
- d. Preservatives
- e. Only one active substance

982. What economic parameter characterizes the effectiveness of the pharmacy's commercial, financial, and manufacturing activity?

- a. Inventory turnover
- b. Stock of goods
- c. Work productivity
- d. Circulation of goods
- e. Profitability

983. 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. USP-1
- c. NS-2 A (neutral glass 2A)
- d. NS-2 (neutral glass 2)
- e. AB-1 (non-boric glass)

984. 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. Colchicine
- b. Ephedrine
- c. Schisandrin
- d. Inulin
- e. Capsaicin

985. A certain herbal raw material is used to make Flamin cholagogue. Name this material:

- a. Helichrysi arenarii flores
- b. Meliloti herba
- c. Tanaceti flores
- d. Violae herba
- e. Crataegi flores

986. A pharmacy owner starts a business in the retail sale of medicines. What document allows the pharmacy owner to trade for cash in his pharmacy?

- a. -
- b. Trade patent
- c. State registration certificate

- d. License for production of medicines
- e. Quality certificate

987. 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

988. What medicinal substance has benzimidazole in its structure?

- a. Metamizole sodium salt (Analgin)
- b. Dibazol (Bendazol)**
- c. Mercazolil (Thiamazole)
- d. Nitrofural (Furacilin)
- e. Diphenhydramine hydrochloride (Dimedrol)

989. 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. Apricot
- b. Cherry**
- c. Acacia
- d. Plum
- e. Tragacanth

990. 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. Verapamil
- b. Enalapril
- c. Propranolol
- d. Bisoprolol
- e. Doxazosin**

991. A dispensing chemist-analyst identifies phenol, using a phenolic hydroxyl reaction. What reagent is necessary for this reaction?

- a. Calcium chloride
- b. Sulfuric acid
- c. Sodium sulfate
- d. Iron(III) chloride**
- e. Potassium chloride

992. What medicinal substance is a derivative of morphinan?

- a. Codeine**
- b. Caffeine
- c. Pachycarpine hydroiodide
- d. Cocaine hydrochloride
- e. Quinine sulfate

993. 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. Glucose
- b. Sodium chloride**
- c. Sodium nitrate
- d. Boric acid
- e. Sodium sulfate

994. Strategic planning of pharmaceutical companies consists of several consecutive stages. What stage is the final one?

- a. Setting goals and tasks
- b. Analysis of organisation's internal strength and weaknesses
- c. Choice of strategy
- d. Environment assessment and analysis
- e. Strategy assessment

995. 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. Optical density
- b. Solution pH
- c. Viscosity
- d. Angle of rotation
- e. Refractive index

996. The medicines that contain anthracene derivatives are used as laxatives. What medicinal plant contains this group of bioactive substances?

- a. Frangula alnus
- b. Calendula officinalis
- c. Bidens tripartita
- d. Eucalyptus globulus
- e. Salvia officinalis

997. 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. Hydrochlorothiazide
- b. Calcium chloride
- c. Potassium aspartate and magnesium aspartate
- d. Euphyllin (Aminophylline)
- e. Calcium gluconate

998. 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. Demographic
- b. Geographical
- c. Behavioral
- d. Social and economic
- e. Psychographic

999. During the transportation of alkaloid drugs, the markings on their packaging were damaged. Qualitative group reactions for alkaloids revealed that the Vitali-Morin test was positive. Therefore, the analyzed drug belongs to the following group of derivatives:

- a. Purine derivatives
- b. Isoquinoline derivatives
- c. Quinuclidine derivatives
- d. Indole derivatives
- e. Tropane derivatives

1000. 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 Althaeae
- b. Radices Ononis
- c. Rhizomata et radices Rubiae

d. Radices Taraxaci

e. Rhizomata et radices Inulae

1001. What is the function of anhydrous lanolin in the suppository mass used for suppositories prepared via hand rolling?

a. Preservative

b. Solubilizer

c. Solvent

d. Emollient

e. Plasticizer

1002. What stabilizer is used to stabilize ascorbic acid solutions for injections?

a. Weibel stabilizer

b. 0.1 M hydrochloric acid solution

c. 0.1 M sodium hydroxide solution

d. Sodium bicarbonate with sodium sulfite

e. Sodium thiosulfate

1003. 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. Precipitation of the formed salt

b. Oxidation of the medicinal substance

c. Hydrolysis of the ester group

d. Decarboxylation of the medicinal substance

e. Reduction of the medicinal substance

1004. What stabilizer must the pharmacist add, when preparing an atropine sulfate solution for injections?

a. Sodium metabisulfite

b. Hydrochloric acid

c. Sodium hydroxide

d. Sodium bicarbonate

e. Ascorbic acid

1005. What medicine obtained from ergot is used in gynecology and has a hemostatic effect?

a. Vinblastine

b. Vincristine

c. Digitoxin

d. Ergotamine hydrotartrate

e. Galantamine hydrobromide

1006. A certain drug explodes when heated to 180°C or upon impact and, therefore, must be handled carefully during receipt and storage. This drug is:

a. Barium chloride

b. Activated carbon

c. Nitroglycerine solution

d. Calcium chloride

e. Alcoholic iodine solution

1007. During identification these active substances form precipitates in gelatin and alkaloid solutions and produce precipitates with heavy metal salts. These active substances are:

a. Iridoids

b. Glycosides

c. Carbohydrates

d. Lipids

e. Tannins

1008. 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. Conversion
- b. Synchromarketing
- c. Counteractive
- d. Remarketing
- e. Stimulating

1009. 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 iron(II) sulfate
- b. Reaction with Molisch reagent
- c. Reaction with Fehling reagent
- d. Reaction with ammonium iron(III) sulfate
- e. Reaction with an alkali

1010. A pharmaceutical manufacturer sets the price for a drug basing on its prime cost with premium. What model of pricing is it?

- a. Cost-based
- b. Supply-based
- c. Competitive
- d. Demand-based
- e. Breakeven

1011. Which one of the listed solutions for injections must be stabilized with a 0.1 mol-eqL solution of hydrochloric acid?

- a. Ascorbic acid
- b. Sodium bicarbonate
- c. Sodium thiosulfate
- d. Caffeine and sodium benzoate
- e. Novocaine (Procaine)

1012. An infusion and a liquid extract used as cardiotonics are obtained from Crataegus oxyacantha flowers and fruits. What active substance that is a component of this herbal raw material can be determined using spectrophotometry?

- a. Papaverine
- b. Lipids
- c. Atropine
- d. Flavonoids
- e. Cytisine

1013. A pharmaceutical factory produces various types of tablets. What is the purpose of Solublettae tablets?

- a. Preparation of solutions for various pharmaceutical purposes
- b. Implantation
- c. Sublingual administration
- d. Preparation of solutions for injections
- e. Rectal administration

1014. 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. Black precipitate
- b. White precipitate
- c. Blue precipitate
- d. Light green precipitate
- e. Yellow precipitate

1015. 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

- b. Theobromine
- c. Theophylline ethylenediamine
- d. Theophylline
- e. Caffeine and sodium benzoate

1016. Sodium and potassium oxides are introduced into the ampoule glass to:

- a. Increase its thermal stability
- b. Increase its mechanical stability
- c. Increase its dimming ability
- d. Decrease its melting point**
- e. Increase its chemical stability

1017. A dispensing chemist was hired to work a night shift at a pharmacy. What time is considered to be a night time according to the Ukrainian legislation currently in force?

- a. From 22:00 to 6:00**
- b. From 22:00 to 10:00
- c. From 22:00 to 7:00
- d. From 21:00 to 6:00
- e. From 00:00 to 8:00

1018. The "Pharmastar" pharmaceutical company develops new dosage forms for its medicines. What type of product policy in marketing is it?

- a. Modernization
- b. Reduction
- c. Product modification**
- d. Differentiation
- e. Diversification

1019. What type of tax is the Individual Income Tax?

- a. Nationwide, indirect
- b. Nationwide, direct**
- c. Local, direct
- d. Local, indirect
- e. Special

1020. 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. Incentive pay
- b. Pension benefit
- c. Reimbursement
- d. Additional salary
- e. Base salary**

1021. What side effect is observed in cases of long-term use of digoxin?

- a. Constipation
- b. Hypertension
- c. Bradycardia**
- d. Hypotension
- e. Hypokalemia

1022. 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. 2 mL
- b. 10 mL**
- c. 1 mL
- d. 5 mL
- e. 0.5 mL

1023. A pharmacy warehouse has received a shipment of drugs. During quality control by an authorized person, there were some drugs of questionable quality detected. What measures should be taken by the authorized person in this case?

- a. Draw up a Quality Assessment Report with the defects listed and allow sale of the drug shipment
- b. Return the shipment to the manufacturer
- c. Samples of questionable drugs should be sent to the local inspectorate department; the rest of the drug shipment should be quarantined with marking "Do not sell until further notice"
- d. Dispose of the shipment that contains questionable drugs
- e. Allow sale of the drug shipment

1024. Licorice roots contain saponins. What reaction can prove their presence in the herbal raw material?

- a. Reaction with iron(III) chloride
- b. Fehling's test
- c. Molisch's test
- d. Foaming reaction
- e. Dragendorff's test

1025. A potassium permanganate solution needs to be prepared for a patient. What solvent should be used in this case?

- a. Mint water
- b. Water for injections
- c. Demineralized water
- d. Ethyl alcohol
- e. Freshly prepared purified water

1026. Origanum vulgare herbal raw material is harvested during the flowering. How is it harvested?

- a. The leaves are plucked with the stem
- b. The whole plant is dug up
- c. The whole plant with a root is pulled out from the soil
- d. Only the tips of the inflorescences are cut
- e. The grass is cut with a knife or sickle at a distance of 20-30 cm from the ground

1027. A pharmaceutical factory produces juices from fresh herbal raw materials. What technological operation is performed at the stage of juice purification?

- a. Crystallization
- b. Sedimentation
- c. Filtration
- d. Adsorption
- e. Heating followed by rapid cooling

1028. What is the amount of the value added tax (VAT) on the medical products sold by a pharmacy.

- a. 7%
- b. 25%
- c. 5%
- d. 10%
- e. 15%

1029. To stabilize the suspension a pharmacist has used potassium soap. What substance does this suspension contain?

- a. Sulfur
- b. Camphor
- c. Menthol
- d. Basic bismuth nitrate
- e. Phenyl salicylate

1030. 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. The Ministry of Public Health of Ukraine
- b. Labour disputes committee (LDC)
- c. Highest management bodies of pharmaceutical service at the regional level
- d. Trade union committee
- e. Commercial court

1031. A 36-year-old patient developed acute pyelonephritis. What antibacterial agents has a nephrotoxic effect?

- a. Ampicillin
- b. Erythromycin
- c. Gentamicin
- d. Tetracycline
- e. Penicillin

1032. Spectrophotometric analysis of anthracene derivatives contained in buckthorn bark is based on the following reaction:

- a. Sublimation
- b. Oxidation of anthracene derivatives
- c. Anthraquinone reduction
- d. Production of phenolates with alkali-ammonia solution
- e. Salt precipitation

1033. Specify the control methods aimed at detecting mechanical impurities in parenteral solutions:

- a. NMR and UV-visible spectroscopy
- b. Limulus test
- c. Amperometric
- d. Gravitational
- e. Visual optical

1034. 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. Disintegrator, liquid whistle
- c. Centrifugal mixer with rotating housing
- d. Liquid whistle, magnetostrictive source
- e. Dismembrator, electrical impulse plasmolyzer

1035. 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. Ester group
- d. Phenolic hydroxyl
- e. Keto group

1036. What substance can be synthesized as a result of the condensation of 5-nitrofurfural with semicarbazide?

- a. Phthalazole (Phthalylsulfathiazole)
- b. Metronidazole
- c. Norfloxacin
- d. Nitrofural (Nitrofurazone)
- e. Nitroxoline

1037. Complex drug product Urolesan is a litholytic, antispasmodic, and diuretic agent. It contains ethanolic extract of:

- a. Rhododendron tomentosum
- b. Matricaria chamomilla
- c. -
- d. Thymus serpyllum

e. *Origanum vulgare*

1038. 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. Functional
- b. Line and staff
- c. Line
- d. Divisional
- e. Matrix

1039. Specify the drugs recommended for prevention and correction of dysbiotic problems caused by antibiotic therapy:

- a. Prokinetics
- b. Probiotics
- c. Antacids
- d. Choleretics
- e. Uroseptics

1040. What medicinal substance must fill only 2/3 of the vial before sterilization?

- a. Sodium bicarbonate
- b. Calcium chloride
- c. Hexamethylenetetramine
- d. Euphyllin (Aminophylline)
- e. Sodium chloride

1041. How often should a pharmacy make an inventory of its fixed assets?

- a. At least once in a quarter
- b. At least twice a year
- c. Once a year
- d. Once every three years
- e. At least thrice a year

1042. An accountant conducts necessary calculations for remuneration of labor. Name the type of remuneration that is due for labor carried out according to the work standards and is paid within the amount determined by basic or piece wages for factory workers and salaries for office workers:

- a. One-off payment
- b. Bonus
- c. Increment
- d. Financial aid
- e. Basic pay

1043. Lately the Phytopharm pharmaceutical company has been forced to decrease its production volume and range of goods. Not only does the company head manager demonstrate no managerial abilities, but he also appears to be completely disinterested in the running of the business and executes no control over it. Determine the leadership type of the head manager in this case:

- a. Democratic
- b. Directive
- c. Liberal
- d. Autocratic
- e. Authoritarian

1044. What medicinal agents must be manufactured in aseptic conditions followed by thermal sterilization with high-pressure saturated steam?

- a. Injection solutions with thermolabile substances
- b. Liquid ingestible antibiotics
- c. Concentrated solutions for burette systems
- d. 2% collargol solution for infants
- e. Injection solutions with thermostable substances