



**STATE NON-PROFIT ENTERPRISE «TESTING BOARD FOR PROFESSIONAL  
COMPETENCE ASSESSMENT OF HIGHER EDUCATION TRAINEES IN  
MEDICINE AND PHARMACY AT THE MINISTRY OF PUBLIC HEALTH OF  
UKRAINE»**

Student ID							
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Variant 02

**TEST ITEMS  
FOR THE UNIFIED STATE QUALIFICATION EXAM  
STAGE 2**

**INTEGRATED TEST EXAM  
KROK 2**

**Specialty «PHARMACY, INDUSTRIAL  
PHARMACY»**

***Specialization  
«PHARMACY»***

1. Oxazepam is a benzodiazepine derivative. What method is used for its quantification?

- A. Alkalimetry, substitution titration
- B. Bromatometry, direct titration
- C. Acidimetry in a non-aqueous medium
- D. Complexonometry, back titration
- E. Alkalimetry in an aqueous medium

2. An analytical pharmacist uses alkalimetry for quantification of enalapril maleate. What device is used by the pharmacist to determine the titration endpoint?

- A. Refractometer
- B. Polarimeter
- C. Potentiometer
- D. Polarograph
- E. Fluorometer

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

- A. Monetary funds
- B. Authorized capital
- C. Goods
- D. Fixed assets
- E. Accounts receivable

4. What excipient ensures the stickiness of an adhesive bandage when it is applied to the skin?

- A. Glycerine
- B. Carbopol (Carbomer)
- C. Rosin
- D. Methyl cellulose
- E. Starch

5. When pharmacies sell medicines, such transactions are subject to VAT (value added tax) at the rate of 7%. Who is the payer of this tax?

- A. —
- B. Consumer
- C. Pharmacy
- D. Manufacturer
- E. Supplier

6. A pharmacist at the compounding department of a pharmacy is preparing a suspension with phenyl salicylate. What stabilizer should be used when making this dosage form?

- A. Hydrochloric acid solution
- B. Sodium hydroxide solution
- C. Potassium soap
- D. Tween 80 (Polysorbate 80)
- E. Sodium chloride

7. In the process of conflict resolution, both parties have reached an understanding and partially satisfied their interests through mutual concessions. What method of conflict resolution was used in this case?

- A. Confrontation
- B. Coercion
- C. Sabotage
- D. Boycott
- E. Compromise

8. A 35-year-old patient has been diagnosed with calculous cholecystitis. What drug can be used to dissolve gallstones?

- A. Artichoke extract
- B. Glutargin (Arginine glutamate)
- C. Lipoic acid
- D. Ursodeoxycholic acid
- E. Famotidine

9. A 65-year-old woman has been provisionally diagnosed with early stage osteoporosis. What diagnostic method would be most informative for confirming this diagnosis?

- A. Diagnostic ultrasound
- B. Sodium blood test
- C. Densitometry
- D. Blood glucose test
- E. Potassium blood test

10. A pharmacist at the compounding department of a pharmacy is preparing an ointment with a hydrophobic base. What excipient should the pharmacist add to increase the melting point and viscosity of the ointment base?

- A. Beeswax
- B. Vaseline oil (Liquid paraffin)
- C. Alcohol
- D. Dimethyl sulfoxide
- E. Vaseline (Petroleum jelly)

11. An anti-ulcer drug containing bismuth subcitrate was received by a drug quality control laboratory. In the reaction for bismuth cations, a yellowish-orange coloring was observed. What reagent was used in this test?



- A. Sodium hydroxide
- B. Potassium acetate
- C. Hydrochloric acid
- D. Thiourea
- E. Glyoxalhydroxyanil

12. An analytical pharmacist identifies a primary aromatic amino group in the structure of benzocaine. What forms as a result of the reaction, used for its identification?

- A. Murexide
- B. Azo dye
- C. Iodoform
- D. Fluorescein
- E. Indophenol

13. A 27-year-old woman with signs of thyrotoxicosis and an enlarged thyroid gland has been diagnosed with diffuse nodular goiter. What drug should she be prescribed for antithyroid therapy?

- A. Levothyroxine sodium
- B. Insulin
- C. Thiamazole
- D. Hydrocortisone
- E. Adrenaline hydrotartrate

14. At a drug quality control laboratory, an analytical pharmacist uses substitution iodometry for the quantification of a tosylchloramide sodium substance. What titrant is used in this method?

- A. Zinc sulfate
- B. Perchloric acid
- C. Potassium permanganate
- D. Cerium sulfate
- E. Sodium thiosulfate

15. Camphor that is used in medical practice is a racemic mixture. What parameter differentiates this substance from its optically active isomers?

- A. Refractive index
- B. Angle of rotation
- C. Dynamic viscosity
- D. Relative density
- E. Boiling point

16. Cash flow accounting in pharmacies is carried out using a POS system (cash register) that prints various reporting checks during the working day. What is the name of the report that is printed at the end of the working day and shows the total sales amount for the shift?

- A. Fiscal check
- B. Cashier's report
- C. X-report
- D. Z-report
- E. —

17. Alkalimetry in a non-aqueous medium is used for quantification of a phenobarbital substance. What reagent is used as a solvent for this purpose?

- A. Acetic anhydride
- B. Formic acid
- C. Glacial acetic acid
- D. Dimethylformamide
- E. Ethyl alcohol

18. Chloramphenicol that is a natural antibiotic with an aromatic structure is obtained synthetically in the pharmaceutical industry. What is the initial compound in the synthesis of this active pharmaceutical ingredient?

- A. p-Nitroacetophenone
- B. Salicylic acid
- C. Acetic acid
- D. Ascorbic acid
- E. m-Aminobenzoic acid

19. Which one of the listed solutions for injections must be stabilized with a 0.1 mol-eq/L solution of hydrochloric acid?

- A. Sodium bicarbonate
- B. Novocaine (Procaine)
- C. Caffeine and sodium benzoate
- D. Sodium thiosulfate
- E. Ascorbic acid

20. What substances must be quantified in *Laminariae thalli* herbal raw material according to the monograph of the State Pharmacopoeia of Ukraine?

- A. Tannins and polysaccharides
- B. Essential oils
- C. Total iodine and polysaccharides
- D. Total protein
- E. Flavonoids

21. Medical products that cannot be used anymore because they are past their expiration date were discovered in the pharmacy's stock. What should the pharmacy employees do with these medical products?

- A. Donate them to charity
- B. Place them in a quarantined area to be disposed of later
- C. Recycle and reuse them
- D. Return them to the supplier
- E. Sell them at a discount

22. What indicator is used in quantification of paracetamol using the cerimetry method?

- A. Potassium chromate
- B. Starch
- C. Phenolphthalein
- D. Ferroin
- E. Sodium eosinate

23. What is the minimum amount of atropine sulfate that can be weighed on the hand scales?

- A. 0.02 g
- B. 0.01 g
- C. 0.04 g
- D. 0.05 g
- E. 0.03 g

24. What conditions are necessary for the specific uroseptic pharmacological effect of *Arctostaphylos* leaves to occur in the body?

- A. High glucose levels in urine
- B. Alkaline urine reaction
- C. Acidic urine reaction
- D. Presence of protein in urine
- E. Neutral urine reaction

25. What substance must be measured in willow bark for its standardization according to the monograph of the State Pharmacopoeia of Ukraine?

- A. Arbutin
- B. Cynarine
- C. Salidroside
- D. Salicin
- E. Cyanine

26. To use his working time more efficiently, the pharmacy's head manager divides his tasks into groups based on their importance and urgency, separating minor tasks from important decisions, and enters them into a matrix with four segments. What matrix is it?

- A. McKinsey Matrix
- B. Eisenhower Matrix
- C. SWOT analysis
- D. Boston Consulting Group Matrix
- E. Porter Matrix

27. What quality parameters must be additionally controlled in production of emulsion ointments?

- A. Loss on drying
- B. Colloidal and thermal stability
- C. Dose uniformity
- D. Microbiological purity
- E. Absence of mechanical impurities

28. The presence of opium alkaloids in a herbal raw material can be confirmed if a reaction for a certain substance is positive. Name this substance.

- A. Aconitic acid
- B. Ferulic acid
- C. Chlorogenic acid
- D. Meconic acid
- E. Chelidonic acid

29. Based on its structure, verapamil hydrochloride is a derivative of a certain chemical compound. Name this compound.

- A. Phenothiazine
- B. Dihydropyridine
- C. Pyrimidine
- D. Phenylalkylamine
- E. Benzothiazepine

30. In the process of hydrocortisone acetate quantification, an analytical pharmacist measures the optical density of the solution. What instrument is used for this purpose?

- A. pH meter
- B. Polarograph
- C. Spectrophotometer
- D. Refractometer
- E. Polarimeter

31. 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 50%
- B. At least 20%
- C. At least 65%
- D. At least 40%
- E. At least 30%

32. In the process of identification of an acetylsalicylic acid substance, its alkaline hydrolysis is carried out. After acidification of the reaction medium, a crystalline precipitate forms with positive reaction for salicylates. What reagent solution is used in this reaction?

- A. Ammonium oxalate solution
- B. Magnesium sulfate solution
- C. Sodium bicarbonate solution
- D. Sodium hydrotartrate solution
- E. Iron (III) chloride solution

33. A retail company that sells medicines has chosen the simplified tax system. What document must it submit to the state tax authority within the deadline established by the law?

- A. Balance
- B. Financial statement
- C. Report on the economic activity of a pharmacy
- D. Inventory report
- E. Tax return

34. What substance is usually included in iron supplements to improve iron absorption?

- A. Copper
- B. Ascorbic acid
- C. Malic acid
- D. Citric acid
- E. Selenium

35. 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. Benzylpenicillin sodium salt
- C. Levofloxacin
- D. Clarithromycin
- E. Amoxicillin

36. Decree 360 of the Ministry of Health of Ukraine establishes the norms for dispensing medicines per prescription for outpatients. What is the maximum permissible for dispensing amount of phenobarbital as a component in a combination drug?

- A. 10.0 g
- B. 5.0 g
- C. 2.0 g
- D. 1.0 g
- E. 7.0 g

37. A patient with allergic rhinitis has been recommended a drug for the prevention of exacerbations of this health condition. The recommended drug is a membrane stabilizer of tissue basophils and circulating basophils (mast cells). Select this drug from the list.

- A. Cromoglicic acid
- B. Beclomethasone
- C. Loratadine
- D. Clemastine
- E. Levocetirizine

38. An advertising article published in a pharmaceutical magazine provides information about the therapeutic effectiveness and safety of a certain drug with references to the results of its clinical trials. What motivation is used by such advertising?

- A. Psychological
- B. Emotional
- C. Ethical
- D. Rational
- E. Economic

39. A pharmaceutical company mass produces and sells medicines for all market segments. What marketing strategy does this company use?

- A. Differentiated marketing
- B. Diversification
- C. Undifferentiated marketing
- D. Concentrated marketing
- E. Demarketing

40. What substance must be added last when preparing powders?

- A. Potassium bromide
- B. Codeine
- C. Sugar
- D. Magnesium oxide
- E. Glucose

41. A lipophilic ointment containing ephedrine hydrochloride is being prepared at the compounding department of a pharmacy. What type of dispersion system will form as a result?

- A. Emulsion ointment
- B. Solution ointment
- C. Alloy ointment
- D. Extraction ointment
- E. Suspension ointment

42. When analyzing a medicinal substance, an analytical pharmacist conducted a reaction with phenazone in the presence of dilute hydrochloric acid, which resulted in a green coloring. What ions are present in the substance, as indicated by this analytical effect?

- A. Iodides
- B. Sulfates
- C. Bromides
- D. Nitrites
- E. Fluorides

43. What group of people can buy their medicines at a 50% discount when undergoing outpatient treatment, if they have a doctor's prescription?

- A. People with disabilities, groups I and II
- B. People with cancer
- C. Participants in military operations
- D. Patients with rheumatoid arthritis
- E. HIV-infected people

44. To confirm the identity of *Crataegus* fruits, concentrated hydrochloric acid and magnesium shavings were added to the extract. As a result, pink-red coloring was observed. What bioactive substances are present in the extract, as indicated by such a reaction result?

- A. Tannins
- B. Anthracene derivatives
- C. Flavonoids
- D. Alkaloids
- E. Cardiac glycosides

45. Your colleague, an intern, needs to choose the optimal blood sugar-reducing drug for the treatment of moderately severe type 2 diabetes mellitus accompanied by obesity. What drug would you recommend?

- A. Acarbose
- B. Gliclazide
- C. Glipizide
- D. Insulin
- E. Metformin

46. A doctor plans to prescribe a glucocorticosteroid drug to a patient with systemic lupus erythematosus. What is an absolute contraindication to the use of this group of drugs?

- A. Cushing disease
- B. Arterial hypertension
- C. Diabetes mellitus
- D. Tendency toward thrombosis
- E. Gastric and/or duodenal ulcer

47. A 28-year-old patient has been diagnosed with primary syphilis. What drug would be most effective in this case?

- A. Lincomycin
- B. Ofloxacin
- C. Benzylpenicillin sodium salt
- D. Metronidazole
- E. Gentamicin

48. 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. 10.0 g and 100 mL
- D. 0.25 g and 100 mL
- E. 20.0 g and 140 mL

49. A pharmacist at the extemporaneous compounding department of a pharmacy prepares Vishnevsky liniment. What can be used to replace castor oil in the liniment, if castor oil is unavailable?

- A. Peach oil
- B. Birch tar
- C. Almond oil
- D. Vaseline oil (liquid paraffin)
- E. Fish oil

50. Alkaloid cytisine has an analeptic effect and is used as pharmaceutical support for quitting smoking. What herbal raw material is the source of this alkaloid?



- A. *Thermopsis* seeds
- B. *Ephedra* grass
- C. *Vinca minor* grass
- D. *Chelidonium* grass
- E. *Berberis* roots

51. At a drug quality control laboratory, an analytical pharmacist is analyzing an ampicillin substance. What solution is used for identification of sodium ions?

- A. Ammonium oxalate
- B. Potassium pyroantimonate
- C. Sodium nitrite
- D. Silver nitrate
- E. Tartaric acid

52. What medicine cannot be prescribed to outpatients?

- A. Zopiclone tablets
- B. Tramadol suppositories
- C. Codeine tablets
- D. Nitrous oxide
- E. Diazepam tablets

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

- A. Furanochromon kelin
- B. Furocoumarin psoralen
- C. Hydroxycoumarin esculin
- D. Free coumarin
- E. Pyranocoumarin visnadin

54. A patient with iron deficiency anemia has been prescribed iron sulfate. What is the most common side effect of oral iron supplements?

- A. Constipation
- B. Increased blood pressure
- C. Jaundice
- D. Bradycardia
- E. Edema

55. A pharmaceutical company produces adhesive bandages (*Leukoplastum*). What type of adhesive bandage is it, based on its composition?

- A. Lead
- B. Liquid
- C. Natural rubber latex
- D. Resin/wax
- E. Diadermatic

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

- A. When 50% of employees from the original team leave the team
- B. Whenever a new employee joins the team
- C. When 30% of employees from the original team leave the team
- D. Whenever an employee leaves the team
- E. When 25% of employees from the original team leave the team

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

- A. Neutral glass "HC-2A"
- B. Alkaline glass "AB-1"
- C. Neutral glass "HC-2"
- D. Light-resistant neutral glass "CHC-1"
- E. Borosilicate neutral glass "YCH-1"

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

- A. Flowability
- B. Bulk volume
- C. Compaction (compression) coefficient
- D. Porosity
- E. Compression value

59. A pharmaceutical company specializes in developing orphan drugs for treatment of rare genetic diseases. What market reach strategy is used by this company, if it focuses its marketing efforts on a small group of consumers and physicians?

- A. Deep market penetration
- B. Undifferentiated marketing
- C. Concentrated marketing
- D. Differentiated marketing
- E. Diversification

60. What is the optimal temperature range for drying a herbal raw material that contains cardiac glycosides (primary glycosides)?

- A. 50-60°C
- B. 80-90°C
- C. 75-80°C
- D. 30-45°C
- E. 100°C

61. Aqueous lanolin is an emulsion ointment base that is well absorbed by the skin due to its water content. What is the correct ratio of components in the composition of this base?

- A. 50 parts of anhydrous lanolin and 50 parts of purified water
- B. 80 parts of anhydrous lanolin and 20 parts of purified water
- C. 90 parts of anhydrous lanolin and 10 parts of purified water
- D. 30 parts of anhydrous lanolin and 70 parts of purified water
- E. 70 parts of anhydrous lanolin and 30 parts of purified water

62. The head manager of a pharmacy pays considerable attention to the organization of his own workplace, planning and analysis of his office hours, receiving visitors, conducting business negotiations and meetings, and organizing his information support. What type of activity is it?

- A. Business planning
- B. Delegation of authority
- C. Leadership
- D. Entrepreneurship
- E. Self-management

63. Purification of tinctures requires at least 48 hours, if sedimentation method is used. At what temperature does this process take place?

- A. No higher than -20°C
- B. No higher than 0°C
- C. No higher than +5°C
- D. No higher than +30°C
- E. No higher than +10°C

64. What herbal drug is used in treatment of hypoacid gastritis?

- A. *Plantago* extract
- B. *Bidens* grass
- C. Castor oil
- D. Chamomile flowers
- E. Thyme grass

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

- A. Aminoglycosides
- B. Carbapenems
- C. Macrolides
- D. Cephalosprins
- E. Penicillins

66. In the process of biotransformation, ascorbic acid converts to dehydroascorbic acid. What chemical properties does ascorbic acid exhibit in this reaction?

- A. Complexation
- B. Basic
- C. Oxidizing
- D. Acidic
- E. Reducing

67. What is the initial compound in the synthesis of a benzimidazole derivative — bendazole?

- A. Ethylenediamine
- B. Beta-picoline
- C. o-Phenylenediamine
- D. p-Nitrotoluene
- E. Phenol

68. 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. Chondrotoxicity
- B. Hematotoxicity
- C. Nephrotoxicity
- D. Cardiotoxicity
- E. Hepatotoxicity

69. To make a decision about advertising a new antiviral drug, the head of the marketing team involved competent experts. Together these experts were generating ideas, discussing proposals, and analyzing opportunities until they were able to select the most promising one. Their work was being carried out under the guidance of a moderator. What decision-making method was used by the head of the marketing team in this situation?

- A. Ringi-sho system
- B. Analogical reasoning
- C. Delphi method
- D. Brainstorming
- E. Decision tree

70. A drug that has a tonic effect on the central nervous system contains saponi-



ns that are dammarane-type triterpene tetracyclic compounds. What plant is the source of these compounds?

- A. *Calendula officinalis*
- B. *Ortosiphon stamineus*
- C. *Polemonium coeruleum*
- D. *Glycyrrhiza glabra*
- E. *Panax ginseng*

71. 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. Tender
- C. Direct investments
- D. Joint venture
- E. Franchising

72. A pharmacist has received a part-time job at a pharmacy. Can a corresponding entry be made in the employment record book when a person is working part-time?

- A. The entry must be made
- B. The entry can be made at the request of the employee
- C. The entry can be made based on the management's decision at the place of part-time job
- D. The entry cannot be made
- E. The entry can be made based on the management's decision at the place of the main job

73. When preparing a collargol solution, the pharmacist had filtered the water into the vial for dispensing, then added the collargol and shook the vial. What concentration of collargol is it, as indicated by the technology, used by the pharmacist?

- A. Less than 0.1 %
- B. Less than 1 %
- C. Less than 3 %
- D. Less than 8 %
- E. Less than 5 %

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

- A. Potassium
- B. Sulfates
- C. Ammonium salts
- D. Iron
- E. Chlorides

75. What drug is used in the *H. pylori* eradication scheme?

- A. Famotidine
- B. Ceftriaxone
- C. Ranitidine
- D. Vancomycin
- E. Amoxicillin

76. The standardization department at a factory assesses the quality of a suspension. What device is used to measure the homogeneity of the dispersed phase particles in this dosage form?

- A. Microscope
- B. Refractometer
- C. pH meter
- D. Distiller
- E. Polarimeter

77. Name the method of accounting, where each business transaction is recorded twice in the same amount in the debit of one account and in the credit of another account.

- A. Double-entry
- B. Inventory-taking
- C. Assessment and calculation
- D. Balance
- E. Documentation

78. Under the current legislation, pharmacies must have certain service rooms. What is the minimum area of the pharmacy's staff room, if the pharmacy is located in a city?

- A. 15 m<sup>2</sup>
- B. 8 m<sup>2</sup>
- C. 4 m<sup>2</sup>
- D. 20 m<sup>2</sup>
- E. 18 m<sup>2</sup>

79. A doctor has prescribed hydrochlorothiazide tablets to a patient diagnosed with heart failure, degree II. What condensed system underlies the structure of this active pharmaceutical ingredient?

- A. Isoquinoline
- B. Quinoline
- C. Benzothiadiazine
- D. Xanthine
- E. Indole

**80.** In addition to the sale of goods, pharmacies are accounting certain other documented operations that reduce their stock. Select from the list one such operation that reduces the pharmacy's stock.

- A. Providing first aid
- B. Recording herbal raw materials as received
- C. Recording surplus goods discovered during stock-taking as received
- D. Recording the amount of *taxa laborum* as received
- E. Revaluation for packaging

**81.** Having studied the demand for dietary supplements, the company determined that they are most often purchased by women within the age range from 35 to 50. What market segmentation principle was used by the company?

- A. Geographical
- B. Psychographic
- C. Demographic
- D. Behavioral
- E. Socio-economic

**82.** According to the State Pharmacopoeia of Ukraine, the quantitative content of alkaloids in *Datura* leaves must be calculated in terms of a pharmacopoeial standard sample. What substance is used as such a standard?

- A. Chlorogenic acid
- B. Ruberythric acid
- C. Aesculetin
- D. Hyoscyamine
- E. Quercetin

**83.** An analytical pharmacist conducts an identification reaction of a papaverine hydrochloride substance with an ammonia solution, which results in formation of a papaverine base precipitate. What physical value is used for the identification of this precipitate?

- A. Refractive index
- B. Boiling point
- C. Dropping point
- D. Relative density
- E. Melting point

**84.** Specify the method of extraction used in production of extract-based preparations, that consists of very intensive mixing of the raw material and the extractant by a high-speed propeller or turbine mixer.

- A. Maceration
- B. Circulation extraction
- C. Vortex extraction
- D. Remaceration
- E. Percolation

**85.** Specify the moisture content limit for dry extracts.

- A. No less than 1%
- B. No more than 10%
- C. No less than 5%
- D. No more than 1%
- E. No more than 5%

**86.** Rutin has a capillary-strengthening effect, especially in combination with ascorbic acid, reducing the permeability and fragility of blood vessels. What medicinal plant is an industrial source of this bioactive substance?

- A. *Sophora japonica*
- B. *Convallaria majalis*
- C. *Capsicum annuum*
- D. *Atropa belladonna*
- E. *Capsella bursa-pastoris*

**87.** What method is used to determine the type of emulsion?

- A. Infusion
- B. Dialysis
- C. Filtering
- D. Distillation
- E. Dilution

**88.** A marketing expert is analyzing how the sales volume of a medicine changes as its price increases. What coefficient should be calculated in this situation?



- A. Price liquidity ratio
- B. Solvency adequacy ratio (Price-to-salary ratio)
- C. Assortment stability
- D. Competitiveness
- E. Elasticity of demand

89. The doctor prescribed a  $\beta$ -blocker and a loop diuretic to a patient with chronic heart failure, which resulted in electrolyte imbalance — hypokalemia. The doctor replaced the diuretic with a different one, which allowed normalizing the potassium levels in the blood. What diuretic was prescribed by the doctor?

- A. Hydrochlorothiazide
- B. Spironolactone
- C. Indapamide
- D. Torasemide
- E. Acetazolamide

90. "Balance" accounting form consists of two parts — assets and liabilities. Select from the list only the liabilities.

- A. Authorized capital, fixed assets
- B. Fixed assets, accounts receivable
- C. Retained earnings, intangible assets
- D. Bank loan, accounts payable
- E. Accounts receivable, prepaid expenses

91. A pharmaceutical company's laboratory has received sulfathiazole (Norsulfazole) — a broad-spectrum sulfonamide antibacterial agent. What reagent is used to detect the sulfamide group in its structure?

- A. Ammonium chloride
- B. Potassium bromate
- C. Copper sulfate
- D. Potassium bromide
- E. Sodium carbonate

92. A 17-year-old teenager has been prescribed adapalene topically for the treatment of acne. How soon can a therapeutic effect be expected after starting the treatment?

- A. 3-4 weeks
- B. 8-12 weeks
- C. 6-7 weeks
- D. 1-2 weeks
- E. 5-6 weeks

93. The extemporaneous compounding department of a pharmacy prepares eye drops. Which one of the listed

substances is a preservative?

- A. Polyvinyl alcohol
- B. Sodium chloride
- C. Acetate buffer
- D. Benzalkonium chloride
- E. Methyl cellulose

94. A pharmacist at the compounding department of a pharmacy is making a sulfur suspension. What stabilizer should the pharmacist add?

- A. Apricot gum
- B. Tween 80
- C. Potassium soap
- D. Gelatose
- E. 5% methyl cellulose solution

95. A drug quality control laboratory received antimicrobial agent ciprofloxacin hydrochloride. What reagent will be used by an analytical pharmacist for identification of chloride ions in the presence of concentrated sulfuric acid?

- A. Magnesium sulfate
- B. Zinc nitrate
- C. Sodium hydroxide
- D. Potassium chloride
- E. Potassium dichromate

96. A pharmacist at the compounding department of a pharmacy prepares mucus from a herbal raw material in the ratio of 1:20. What herbal raw material is it?

- A. Flax seeds
- B. Rosehips
- C. *Althaea* roots
- D. *Frangula* bark
- E. *Convallaria* grass

97. An analytical pharmacist performs rapid analysis of a mixture that contains calcium chloride. What reagent solution is used by the pharmacist to identify calcium cations in this case?

- A. Barium chloride
- B. Sodium tetraphenylborate
- C. Potassium pyroantimonate
- D. Copper (II) sulfate
- E. Ammonium oxalate

98. On the initiative and with support of the manufacturing company, free samples of adhesive bandages were handed out to the visitors at a

pharmacy. What element of the marketing communications complex is it?

- A. Personal selling
- B. Public relations
- C. Advertising
- D. Sales promotion, sampling
- E. Lobbying

99. To conduct an in-depth analysis of the pricing situation on the market, a pharmaceutical company assesses how the patient's purchasing power impacts the demand for medicines. What ratio is calculated by the company in this case?

- A. Product turnover ratio
- B. Liquidity ratio
- C. Affordability ratio
- D. Solvency adequacy ratio (Price-to-salary ratio)
- E. Price growth anticipation

100. The head manager of a pharmacy orders his deputy to determine the demand for medicines. What type of communication is it?

- A. Vertical descending
- B. Vertical ascending
- C. Informal
- D. External
- E. Horizontal

101. When entering the Ukrainian market, a foreign pharmaceutical company has made long-term agreements with three distributors that would supply its products to retailers. What type of distribution is it?

- A. Intensive
- B. Exclusive
- C. Selective
- D. Direct
- E. Combined

102. What is the diameter of tablets that are called briquettes?

- A. More than 25 mm
- B. No more than 15 mm
- C. More than 10 mm
- D. No more than 30 mm
- E. 45 mm

103. What prescription form should the doctor use when prescribing "Morphine hydrochloride" tablets for a patient who has the status of an Honored Donor of Ukraine?

- A. Two copies of F-1
- B. F-3
- C. F-3 and F-1
- D. F-1
- E. Two copies of F-3

104. A pharmacist at the compounding department of a pharmacy is using the pouring method to make suppositories with a hydrophobic base. What should be used in this case to lubricate the mold for pouring?

- A. Castor oil
- B. Spiritus saponatus
- C. Sunflower oil
- D. Vaseline oil (Liquid paraffin)
- E. Alcohol-ether mixture

105. What is the permissible mass range for vaginal suppositories used in pharmaceutical practice?

- A. 1.5-6.0 g
- B. 1.0-4.0 g
- C. 0.5-1.0 g
- D. 1.0-3.0 g
- E. 1.5-5.0 g

106. The head manager of a pharmacy writes a monthly Inventory Report. What transaction must be entered into the Expenses section of this report?

- A. Tariffs for compounding of extemporaneous drugs
- B. Payment of salaries to the pharmacy employees
- C. Write-off of goods, confiscated for analysis by the State Service on Medicines and Drugs Control
- D. Revaluation for laboratory work and packaging
- E. Receipt of goods from a distributor

107. Business entities need a special license to engage in circulation of narcotic drugs, psychotropic substances, and precursors. How long does such license remain valid?

- A. Indefinitely
- B. 3 years
- C. 10 years
- D. 1 year
- E. 5 years

108. What medicinal plant contains tricyclic sesquiterpenoids?



- A. *Abies sibirica*
- B. *Mentha piperita*
- C. *Ledum palustre*
- D. *Pimpinella anisum*
- E. *Thymus serpyllum*

**109.** A pharmaceutical company manufactures high-viscosity solutions. What type of mixers should be used in their manufacturing to ensure effective mixing of such liquids?

- A. Propeller mixers
- B. Blade mixers
- C. Anchor mixers
- D. Planetary mixers
- E. Turbine mixers

**110.** *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. Essential oils
- B. Polysaccharides
- C. Vitamins
- D. Saponins
- E. Phenolic glycosides

**111.** When performing macroscopic analysis of the bark, the pharmacist observes that it consists of tubular pieces up to 2 mm thick and up to 25 cm long. Their surface is matte, smooth, dark brown with whitish lenticels. When the cork is lightly scraped, a red layer is exposed. The smell is weak. The taste is slightly bitter. What medicinal plant has such a characteristic morphological structure of its bark?

- A. *Datura stramonium*
- B. *Taraxacum officinale*
- C. *Glycyrrhiza glabra*
- D. *Rhamnus frangula*
- E. *Polemonium caeruleum*

**112.** On a live morning TV show, the host talks about his recovery from a cold without mentioning the name of the medicine. However, a medicine package with an easily recognizable logo appears on the table in front of him several times. What type of advertising is it?

- A. Corporate image advertising
- B. Reminder advertising
- C. Internal advertising
- D. Direct advertising
- E. Indirect advertising

**113.** 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. Cardiac glycosides
- C. Coumarins
- D. Saponins
- E. Anthracene derivatives

**114.** During phytochemical analysis of plant roots, the Molisch reaction was performed, resulting in red-violet coloring. The reaction with the Lugol solution was negative. What substance is present in the herbal raw material, as confirmed by these results?

- A. Menthol
- B. Starch
- C. Rutin
- D. Sucrose
- E. Inulin

**115.** Ephedrine hydrochloride is a component of drugs that are used to treat diseases of the upper airways. What morphological part of *Ephedra equisetina* is used as a herbal raw material?

- A. *Semina*
- B. *Fructus*
- C. *Herba*
- D. *Folia*
- E. *Rhizomata et radices*

**116.** When preparing a solution, the pharmacist used an additional technique — grinding in a mortar with water. What substance typically requires this technique?

- A. Calcium gluconate
- B. Copper sulfate
- C. Silver nitrate
- D. Boric acid
- E. Furacilin (Nitrofurantoin)

**117.** What is the main driving force of the diffusion process during the extraction from herbal raw materials?

- A. High polarity of the extractant
- B. High temperature of the extractant
- C. Presence of the cell membrane
- D. Brownian motion of particles
- E. Difference between the active substance concentration in the raw material and in the extractant

**118.** An analytical pharmacist conducts a hydroxamic reaction, when analyzing a testosterone propionate substance. This reaction can confirm the presence of a certain functional group in the structure of the molecule. Name this functional group.

- A. Phenolic hydroxyl group
- B. Ester group
- C. Carboxyl group
- D. Amino group
- E. Aldehyde group

**119.** In the process of strategic planning, the management of a pharmaceutical company has developed its mission and vision. What is the next stage of strategic planning?

- A. Goal-setting
- B. Developing company policy
- C. Evaluating strategic alternatives
- D. Analysis of the company's internal environment
- E. Assessment of external opportunities and threats

**120.** In production of aerosols, propellants are used to create the pressure inside the container. What group of propellants includes methylene chloride and ethylene chloride, based on their aggregate state?

- A. Compressed gases
- B. Volatile organic solvents
- C. Chlorinated hydrocarbons
- D. Propane hydrocarbons
- E. Organofluorine compounds

**121.** A pharmaceutical factory has received a batch of a herbal raw material, consisting of fresh juicy leaves. The leaves are matte, dark green, lanceolate, with a dentate margin and a membranous sheath surrounding the stem. Their venation is parallel, nearly invisible. The smell is weak, specific. The taste is bitter. What medicinal plant has such a characteristic morphological structure of its herbal raw material?

- A. *Hyoscyamus niger*
- B. *Plantago major*
- C. *Digitalis purpurea*
- D. *Aloe arborescens*
- E. *Datura stramonium*

**122.** In the process of nifedipine identification, a sample of this substance was reduced with zinc in an acidic medium. After adding solutions of sodium nitrite and naphthylethylenediamine dihydrochloride to the reaction product, it became red-colored. What functional group is present in the structure of nifedipine, as confirmed by this test?

- A. Aldehyde group
- B. Aromatic nitro group
- C. Ester group
- D. Lactone cycle
- E. Aliphatic amino group

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

- A. Interlevel
- B. Vertical ascending
- C. Vertical descending
- D. External
- E. Horizontal

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

- A. Hypotension
- B. Constipation
- C. Jaundice
- D. Osteoporosis
- E. Hypoglycemia

**125.** A pharmaceutical company is comparing its own selection of medicines with the market-leading products of its competitors. What analysis is being conducted by the company?

- A. Benchmarking
- B. SWOT analysis
- C. Ansoff Matrix
- D. Boston Consulting Group Matrix
- E. ABC analysis

**126.** What technological operation in capsule production ensures the removal of air bubbles during preparation of the



gelatin mass?

- A. Pressure filtration
- B. Applying vacuum
- C. Sedimentation
- D. Homogenization
- E. Centrifugation

**127.** A patient with schizophrenia has been taking clozapine for a long time and is an active smoker (smokes 2-2.5 packs of cigarettes per day). The doctor convinces him to quit smoking. What changes in the effectiveness of clozapine can be caused by the patient's abrupt cessation of smoking?

- A. Decreased concentration of clozapine in the blood, increased risk of toxicity
- B. Increased concentration of clozapine in the blood, decreased effectiveness
- C. Smoking or quitting smoking has no effect on the effectiveness of clozapine
- D. Increased concentration of clozapine in the blood, increased risk of toxicity
- E. Decreased concentration of clozapine in the blood, increased effectiveness

**128.** A patient with arterial hypertension (blood pressure — 190/100 mm Hg, heart rate — 60/min) presents with elevated serum creatinine levels. What drug would be the most rational choice for lowering his blood pressure and simultaneously providing nephroprotection?

- A. Amlodipine
- B. Losartan
- C. Bisoprolol
- D. Hydrochlorothiazide
- E. Verapamil

**129.** A 50-year-old patient came to a doctor with complaints of decreased vision in the left eye, a feeling of fullness in the eye, headache, and blurred vision. Examination reveals increased intraocular pressure in the left eye. What drug is indicated for relief of an acute glaucoma attack?

- A. Pilocarpine hydrochloride
- B. Acetylsalicylic acid
- C. Sulfacyl sodium (Sulfacetamide)
- D. Dexamethasone
- E. Atropine sulfate

**130.** A pharmacist was working on a public holiday and the working hours on

that day exceed the standard workday. How should the pharmacist's salary be calculated for that day?

- A. In the amount of an average one-day salary
- B. 20% of the hourly rate per each hour of work
- C. In the amount of an average two-day salary
- D. As stipulated in the collective labour agreement
- E. —

**131.** The content of a certain excipient must be regulated in tablets according to the normatives. Select this excipient from the list.

- A. Polyvinylpyrrolidone
- B. Starch
- C. Lactose
- D. Sucrose
- E. Fumed silica (Aerosil)

**132.** How many sodium chloride tablets should be taken for the technological control of their mechanical strength, if the mass of one tablet is 0.9 g?

- A. 12
- B. 30
- C. 5
- D. 8
- E. 10

**133.** A 36-year-old woman diagnosed with community-acquired pneumonia is taking macrolide antibiotic azithromycin. Additionally, the doctor prescribed her mucolytic ambroxol. What is the possible result of the interaction between these drugs?

- A. Mucolytics increase the risk of allergic reactions
- B. Mucolytics increase the penetration of antibiotics into bronchial mucus
- C. Mucolytics reduce the penetration of antibiotics into bronchial mucus
- D. Mucolytics reduce the effectiveness of antibiotics
- E. Antibiotics reduce the effectiveness of mucolytics

**134.** A pharmacist at the compounding department of a pharmacy prepares 50 mL of a glucose solution for intravenous administration. What amount of Weibel stabilizer must be added to the sterile solution in this case?

- A. 2 mL
- B. 7.5 mL
- C. 2.5 mL
- D. 5 mL
- E. 4 mL

135. What medicinal plant contains bufadienolide cardiac glycosides?

- A. *Strophanthus kombe*
- B. *Convallaria majalis*
- C. *Helleborus orientalis*
- D. *Digitalis purpurea*
- E. *Allium cepa*

136. Rotary tablet machines are widely used in the pharmaceutical industry. The operation of the press tools of most modern rotary tablet machines additionally includes a preliminary pressing phase. What is the name of this phase?

- A. Structural granulation
- B. Pre-compression
- C. Granulation
- D. Forming
- E. Direct compression

137. 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. 15 minutes
- B. 45 minutes
- C. 10 minutes
- D. 30 minutes
- E. 25 minutes

138. What is the amount of temporary disability benefits, paid to insured persons with less than three years of insurance record?

- A. 100%
- B. 50%
- C. 60%
- D. 70%
- E. 80%

139. What special form must be filled in, when prescribing drugs that are subject to reimbursement?

- A. Prescription form №3 (f-3)
- B. Electronic form
- C. Two copies of prescription form №1 (f-1)
- D. Two prescription forms — form №3 (f-3) and form №1 (f-1)
- E. As usual

140. A pharmaceutical factory uses percolation to produce extracts. What is the percolate flow rate?

- A. 1/48–1/24 of the percolator's volume per hour
- B. 1/3 of the percolator's volume per hour
- C. 1/10 of the percolator's volume per hour
- D. 1/2 of the percolator's volume per hour
- E. 1/5 of the percolator's volume per hour

141. Phenolic alcohols and their glycosides are the main bioactive substances contained in *Rhodiola rosea* rhizomes. What pharmacological effect is characteristic of the drugs made from this herbal raw material?

- A. Antiseptic and diuretic
- B. Laxative and astringent
- C. Anti-inflammatory and diuretic
- D. Adaptogenic and tonic
- E. Cardiotonic and hypotensive

142. A pharmaceutical company's laboratory has received a diltiazem hydrochloride substance. What reagent should be used when testing this substance for heavy metal impurities?

- A. Sulfomolybdenum reagent
- B. Cyanogen bromide reagent
- C. Copper tartrate reagent
- D. Molybdenum-vanadium reagent
- E. Thioacetamide reagent

143. To determine the quantitative characteristics of the immunostimulants market, the marketer took into account the volume of production, imports, exports, and the stock of medicines. What parameter has been calculated by the marketer?



- A. Capacity
- B. Saturation
- C. Dynamics
- D. Share
- E. Conditions

**144.** After summarizing the results of work for the past quarter, the director of a wholesale pharmaceutical company awarded bonuses to several sales managers, which caused dissatisfaction among the colleagues. The director explained that the bonus amount was different because of different work efficiency. What theory of motivation was used by the director?

- A. Herzberg two-factor theory
- B. Maslow hierarchy of needs
- C. Adams equity theory
- D. Moral stimulation
- E. Tugan-Baranovsky theory of needs

**145.** A pharmacist at the compounding department of a pharmacy is preparing an infusion of chamomile flowers. To prepare this dosage form, it is necessary to weigh 25.0 g of the herbal raw material. What scales should be used to weigh this amount of chamomile flowers?

- A. Scales VR-5
- B. Scales VKT-1000
- C. Scales VR-100
- D. Scales VR-20
- E. Scales VR-1

**146.** A pharmacist is making an ointment with a dry belladonna extract. How should the dry extract be introduced into the ointment base?

- A. Dissolve it in ether before introducing it into the ointment base
- B. Pre-disperse it with several drops of glycerine
- C. Introduce it as a suspension
- D. Grind it through a sieve and immediately add it to the ointment base
- E. Pre-disperse it with several drops of alcohol-water-glycerine mixture (1:6:3)

**147.** An analytical pharmacist is

conducting rapid analysis of an antitussive mixture that contains sodium bicarbonate and *Thermopsis* grass extract. What method can be used for the quantification of sodium bicarbonate in this mixture?

- A. Nitritometry
- B. Argentometry
- C. Permanganatometry
- D. Cerimetry
- E. Acidimetry

**148.** A pharmacy visitor asks a pharmacist to recommend her a drug that can be used for symptomatic treatment of 9-year-old girl's wet cough. The child has been ill for the third day already, her body temperature is subfebrile and sputum is difficult to expectorate. The pharmacist recommends an indirect mucolytic. Select this drug from the list.

- A. Carbocysteine
- B. *Plantago major*
- C. Glaucine
- D. *Glycyrrhiza* root
- E. Butamirate

**149.** The Unified Social Contribution (USC) is a mandatory withdrawal from the salary fund of a pharmacy. Who determines the amount of this contribution?

- A. Government
- B. Head manager of the pharmacy
- C. Bank
- D. Company, at its own discretion
- E. Court of law

**150.** 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. *Rhodiola rosea* rhizomata et radices
- B. *Filicis maris* rhizomata
- C. *Hyperici herba*
- D. *Urticae folia*
- E. *Uvae ursi folia*