

1. A pharmaceutical company produces various types of tablets. What is the purpose of *Solublettae* tablets?

- A. To make solutions for various pharmaceutical purposes
- B. For implantation
- C. To make solutions for injections
- D. For sublingual drug administration
- E. For rectal drug administration

2. A pharmaceutical factory produces juices from fresh herbal raw materials. What technological operation is performed at the stage of juice purification?

- A. Heating followed by rapid cooling
- B. Sedimentation
- C. Adsorption
- D. Filtration
- E. Crystallization

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

- A. Fluidity (flowability)
- B. Relative density
- C. Porosity
- D. Humidity
- E. Bulk density

4. A pharmacist has prepared a medicine according to the following prescription:

Rp.: Magnesii oxydi

Natrii hydrocarbonatis ana 0.2

M. f. pulv.

D. t. d. №12

S. Take one powder thrice daily.

What is the best preparation technology in this case?

- A. Comminute sodium bicarbonate, add magnesium oxide, mix
- B. Comminute magnesium oxide, add sodium bicarbonate, mix
- C. Comminute sodium bicarbonate with alcohol, add magnesium oxide, mix
- D. Comminute a part of magnesium oxide, add sodium bicarbonate, then add the remaining magnesium oxide, mix
- E. Comminute magnesium oxide with alcohol, add sodium bicarbonate, mix

5. *Folia Uvae ursi* is a uroseptic agent. What permissible admixture can this herbal raw material contain?

- A. *Folia Vitis idaeae*
- B. *Folia Digitalis lanata*
- C. *Folia Cotini coggygriae*
- D. *Folia Urticae*
- E. *Herba Bursae pastoris*

6. A patient needs eye drops with ri-

boflavin. What substance should the pharmacist add to the solution to ensure its isotonicity, if there are no specific instructions in the doctor's prescription?

- A. Sodium chloride
- B. Sodium sulfate
- C. Boric acid
- D. Glucose
- E. Sodium nitrate

7. What are the additional requirements for the quality of sodium chloride intended for preparation of an infusion solution?

- A. Chemically pure, depyrogenated
- B. Pure for analysis
- C. Type «for injections»
- D. No admixtures of manganese salts
- E. Anhydrous, pure for analysis

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

- A. 15–20°C
- B. 30–45°C
- C. 25–35°C
- D. 80–100°C
- E. 45–55°C

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

- A. Granulation in the fluidized bed
- B. Granulation in the dragee pan
- C. Granulation using briquetting
- D. Granulation in spray dryers
- E. Wet granulation in vertical granulators

10. 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. Pepsin
- B. Tannin
- C. Osarsol
- D. Collargol (Colloidal silver)
- E. Copper sulfate

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

- A. Ethacridine lactate
- B. Magnesium oxide
- C. Streptocide (Sulfanilamide)
- D. Dimedrol (Diphenhydramine)
- E. Glucose

12. What medicinal substance can be mixed

with the powder mass without an additional comminution?

- A. Starch
- B. Camphor
- C. Menthol
- D. Salicylic acid
- E. Streptocide (Sulfanilamide)

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

- A. Flavonoids
- B. Polysaccharides
- C. Tannins
- D. Alkaloids
- E. Vitamins

14. What reagent is used to identify formaldehyde solution?

- A. Chromotropic acid
- B. Benzoic acid
- C. Sulfuric acid
- D. Acetic acid
- E. Tartaric acid

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

- A. Syringe filling
- B. Chamber filling
- C. Vacuum filling
- D. Ultrasonic filling
- E. Vortex filling

16. 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. Capitate, flask-shaped, and stinging hairs; cystoliths; vessels of the conducting bundle; veins, druses of calcium oxalate
- B. Bast fibers, tracheids, starch, vessels
- C. T-shaped hairs along the leaf margin
- D. Many-armed, two-armed, and simple hairs
- E. Simple capitate hairs

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

- A. *Oleum Amygdalarum*
- B. *Oleum Ricini*
- C. *Oleum Cucurbitae*
- D. *Oleum Lini*
- E. *Oleum Maydis*

18. A pharmacy's head manager has received reports on the amount of medicines sold according to the prescriptions and requisitions from healthcare facilities within a certain period. What parameter is it?

- A. Formulation
- B. Income
- C. Profitability
- D. Turnover
- E. Commercial invoices

19. *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. Saponins
- B. Coumarins
- C. Flavonoids
- D. Anthracene derivatives
- E. Tannins

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

- A. Detoxicant
- B. Expectorant
- C. Astringent
- D. Cardiogenic
- E. Litholytic

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

- A. Conical, glabrous, and hollow receptacle
- B. Solid spherical receptacle
- C. Solid hemispherical receptacle
- D. Curved hemispherical receptacle with membranous bracts
- E. Spherical receptacle with membranous bracts

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

- A. Separate from the others
- B. Under normal conditions
- C. Under the temperature of -5°C
- D. In metal containers
- E. Under CO_2 -free conditions

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

- A. *Oleum Lini*
- B. *Oleum Persicorum*
- C. *Oleum Jecoris*
- D. *Oleum Cacao*
- E. *Oleum Cucurbitae*

24. What qualitative reaction proves

the presence of anthracene-derived compounds in a herbal raw material?

- A. Reaction with an alkali
- B. Reaction with Dragendorff's reagent
- C. Reaction with ammonium iron(III) sulfate
- D. Reaction with iron sulfate
- E. Reaction with Fehling's reagent

25. Why is boron oxide added to the glass during the production of ampoules?

- A. To increase the chemical resistance of ampoule glass
- B. To reduce the melting temperature of ampoule glass
- C. To create the necessary color of ampoule glass
- D. To increase the mechanical strength of ampoule glass
- E. To increase the thermal stability of ampoule glass

26. The type of emulsion depends on the:

- A. Nature and properties of the emulsifier
- B. Mass of oil
- C. Mass of purified water
- D. Nature of the introduced medicinal substances
- E. Particle size of the dispersed material

27. What stabilizer is used to stabilize ascorbic acid solutions for injections?

- A. Sodium bicarbonate with sodium sulfite
- B. 0.1 M sodium hydroxide solution
- C. 0.1 M hydrochloric acid solution
- D. Sodium thiosulfate
- E. Weibel stabilizer

28. What is the procedure for introducing aromatic water into the mixture, if it is used as a dispersion medium i?

- A. First, before adding other solutions
- B. After adding concentrated solutions
- C. Before adding ethanol-containing liquids
- D. Last, because it contains an essential oil
- E. After dissolving solid medicinal substances

29. Powder made from rhizomes and roots of a certain medical plant can be used as a substitute for the litholytic and diuretic drug marelin. Name this plant.

- A. *Rubia tinctorum*
- B. *Rhodiola rosea*
- C. *Sanguisorba officinalis*
- D. *Valeriana officinalis*
- E. *Dryopteris filix-mas*

30. Name a medicinal plant that has expectorant and anti-inflammatory

properties, because it contains triterpene saponins:

- A. *Glycyrrhiza glabra*
- B. *Aralia mandshurica*
- C. *Orthosiphon stamineus*
- D. *Panax ginseng*
- E. *Astragalus dasyanthus*

31. What solution should an analytical chemist use to identify bismuth-containing medicinal substances?

- A. Thiourea solution
- B. Iron(III) sulfate solution
- C. Cobalt nitrate solution
- D. Beta-naphthol solution
- E. Potassium permanganate solution

32. An analytical chemist uses nitritometry to quantify procainamide hydrochloride. What indicator is used in this case to determine the titration endpoint?

- A. Tropaeolin 00
- B. Methyl orange
- C. Phenolphthalein
- D. Methyl red
- E. Xylenol orange

33. A 27-year-old woman was diagnosed with community-acquired pneumonia. Previously, she had an allergic reaction to ampicillin. What antibacterial agent should she be prescribed in this case?

- A. Azithromycin
- B. Penicillin
- C. Cefobid (Cefoperazone)
- D. Cefazolin
- E. Ceftriaxone

34. According to the Regulations for Prescribing Medicines and Medical Products, private medical practitioners must indicate the following in the upper left corner of their prescription forms:

- A. Their address, the number and date of issue of their license
- B. Seal of the medical facility
- C. Their address
- D. Number of their license
- E. Their surname and initials

35. What list contains effective and safe medicines and medical products for prevention, diagnosing, and treatment of the most common pathological conditions, based on their importance for the public health in a particular country?

- A. List of essential medicines
- B. List of controlled substances
- C. List of over-the-counter medicines
- D. List of substandard medicines
- E. List of precursors

36. 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. Sulfur
- B. Furacilin (Nitrofuril)
- C. Brilliant green
- D. Riboflavin
- E. Methylene blue

37. A 4-year-old child was prescribed an antibacterial medicine to treat tonsillitis. One week after the treatment, the child complained of ringing in the ears and hearing loss. What antibiotic is likely to have such a side effect?

- A. Gentamicin
- B. Azithromycin
- C. Metronidazole
- D. Ceftriaxone
- E. Ampicillin

38. Due to insufficient production capacities, a pharmaceutical company cannot meet the demand for certain medicines. The company increased the cost of medicines and stopped advertising them. What type of marketing did the company use?

- A. Demarketing
- B. Synchromarketing
- C. Remarketing
- D. Conversion marketing
- E. Incentive marketing

39. A pharmacy performs cashless transactions in the course of its business activity. Therefore, the pharmacy needs to open an account in a banking institution on a contractual basis to store its monetary funds and carry out its settlement and cash transactions in accordance with the requirements of the Ukrainian legislation. What type of account is it?

- A. Current account
- B. Temporary account
- C. Currency account
- D. Card account
- E. Deposit account

40. A pharmaceutical company produces biostimulants of animal origin. The solkoseryl medicine is obtained from:

- A. Blood of cattle
- B. Trachea of cattle
- C. Spleen of cattle
- D. Human blood
- E. Velvet antlers of deer

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

- A. Antidepressant
- B. Expectorant
- C. Anticonvulsant
- D. Antiasthmatic
- E. Analgesic

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

- A. *Fructus Sophorae japonicae*
- B. *Flores Helichrysi arenarii*
- C. *Herba Polygonii avicularis*
- D. *Herba Violae tricoloris*
- E. *Fructus Hippophaes rhamnoides*

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

- A. Ergotamine hydrotartrate
- B. Digitoxin
- C. Vincaton
- D. Vinblastine
- E. Galantamine hydrobromide

44. Profitability is one of the economic indicators of the efficiency of pharmacy's financial, business, and manufacturing activities. How to calculate the profitability of a pharmacy?

- A. The ratio of the total profit to the total turnover * 100%
- B. The ratio of the total profit to the total expenses * 100%
- C. The ratio of the total profit to the total value of fixed assets * 100%
- D. The ratio of the total profit to the total product cost price * 100%
- E. —

45. What herbal raw material contains alkaloid glaucine that has a strong antitussive effect?

- A. *Glaucium flavum* grass
- B. *Macleaya* grass
- C. *Chelidonium* grass
- D. *Vinca minor* grass
- E. *Belladonna* grass

46. Based on its chemical structure, erythromycin belongs to the following group of antibiotics:

- A. Macrolides
- B. β -lactams
- C. Aromatic antibiotics
- D. Polypeptides
- E. Polyenes

47. Which of the plants listed below contain inulin?

- A. *Inula helenium*, *Helianthus tuberosus*
- B. *Salvia officinalis*, *Artemisia absinthium*
- C. *Juniperus communis*, *Thymus serpyllum*
- D. *Ledum palustre*, *Acorus calamus*
- E. *Rhamnus cathartica*, *Sorbus aucuparia*

48. 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 chelidonium. Name this plant:

- A. *Chelidonium majus*
- B. *Berberis vulgaris*
- C. *Atropa belladonna*
- D. *Papaver somniferum*
- E. *Hyoscyamus niger*

49. What is the purpose of determining the specific rotation of glucose solution in the presence of ammonia solution?

- A. To accelerate the establishment of equilibrium of tautomeric forms of glucose in a solution
- B. To improve glucose dissolution
- C. To create a weak alkaline reaction in the medium of the analyzed solution
- D. To transform impurities into ammonium salts
- E. To neutralize gluconic acid

50. One of the reactions that makes it possible to distinguish adrenaline from noradrenaline is the oxidation reaction of 0.05 M iodine solution in buffer solutions with different pH values. What is produced by adrenaline in the course of such reaction?

- A. Red-violet adrenochrome
- B. Red-violet noradrenochrome
- C. Light purple adrenochrome
- D. Red noradrenochrome
- E. Purple adrenochrome

51. A pharmaceutical company produces taste masking syrups. What substance must be removed from a syrup to prevent its jellification?

- A. Pectin
- B. Starch
- C. Sucrose
- D. Glucose
- E. Fructose

52. The head manager of a pharmacy has prepared a work schedule for the staff for the next month. What type of management work is aimed at forming narrow, detailed, short-term plans?

- A. Operational planning
- B. Financial planning
- C. Business planning
- D. Strategic planning
- E. —

53. What type of pharmaceutical company entry into a foreign market involves transferring its own products into the ownership of a foreign intermediary to sell them in another country?

- A. Export
- B. Direct investment
- C. Joint venture
- D. Licensing
- E. Franchising

54. The marketing department of a pharmaceutical company determined that a slight increase in the price of the medicine has significantly reduced its demand. What type of demand is it?

- A. Elastic
- B. Irrational
- C. Inelastic
- D. Rational
- E. Unitary

55. A domestic pharmaceutical company introduces a generic drug to the market at a price much lower than the price of its foreign-made counterparts. What pricing strategy is used by the domestic manufacturer in this case?

- A. Market penetration
- B. Following the leader
- C. «Cream skinning»
- D. Tender pricing
- E. Stimulation

56. When a certain medicine is being sterilized, it typically fills only 2/3 of the volume of a vial before sterilization. Name this medicine.

- A. Sodium bicarbonate
- B. Sodium chloride
- C. Hexamethylenetetramine
- D. Calcium chloride
- E. Euphyllin (Aminophylline)

57. A pregnant woman is at 28 weeks of gestation. During her regular ultrasound examination, a malformation of the fetus was detected. Her medical history informs that she was taking large doses of diazepam without a doctor's prescription. What type of side effect of this medicine has caused the malformation of the fetus?

- A.** Teratogenic
- B.** Embryotoxic
- C.** Fetotoxic
- D.** Carcinogenic
- E.** Mutagenic

58. What influences the choice of an extractant for obtaining individual substances?

- A.** Selectivity towards active substances
- B.** Cost
- C.** Pharmacological indifference
- D.** Heat resistance
- E.** Ability to stop hydrolysis

59. To increase the antihypertensive effect of a diuretic, the doctor advised a patient suffering from arterial hypertension to:

- A.** Reduce the table salt intake
- B.** Increase the table salt intake
- C.** Increase the fluid intake
- D.** Reduce the physical activity
- E.** Increase the physical activity

60. What change in the sorption of other medicines can be caused by activated carbon, if it is included in a combination therapy?

- A.** Decrease of sorption
- B.** Increase of sorption
- C.** No effect
- D.** Acceleration of sorption
- E.** Activation of sorption

61. What group of antibiotics is contraindicated for etiotropic treatment of focal pneumonia in a 63-year-old woman, who has a concomitant diabetic nephropathy with impaired renal function?

- A.** Aminoglycosides
- B.** Natural penicillins
- C.** Semisynthetic penicillins
- D.** Macrolides
- E.** Combined penicillins

62. What drug can cause a child to develop Reye syndrome, when used for treatment of a fever caused by viral organisms?

- A.** Acetylsalicylic acid
- B.** Celecoxib
- C.** Ibuprofen
- D.** Metamizole sodium
- E.** Paracetamol

63. 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.** Linear
- B.** Functional
- C.** Matrix
- D.** Adaptive
- E.** Productive

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

- A.** In the order of increasing alcohol concentration
- B.** In the order of increasing volume of alcohol-containing solutions
- C.** In the order of decreasing alcohol concentration
- D.** In any order
- E.** First into the vial for dispensing

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

- A.** 1.0 and 9.0
- B.** 0.01 and 9.99
- C.** 0.05 and 9.95
- D.** 0.1 and 9.9
- E.** 0.5 and 9.5

66. What substance is most often used as a vehicle in triturations?

- A.** Lactose
- B.** Glucose
- C.** Sucrose
- D.** Starch
- E.** Talcum

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

- A.** The principle of «three layers»
- B.** Preliminary sifting
- C.** Mixing in ascending order, from smaller to larger volume
- D.** Mixing in descending order, from larger to smaller volume
- E.** The dye is added last, after the mixture is prepared

68. What amount of furacilin (nitrofurazone) is needed to prepare 250 mL of solution (1: 5000)?

- A. 0.05
- B. 0.5
- C. 5.0
- D. 0.025
- E. 0.25

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

- A. 10 mL
- B. 3 mL
- C. 6.25 mL
- D. 7.5 mL
- E. 12.5 mL

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

- A. 20 mL
- B. 5 mL
- C. 10 mL
- D. 30 mL
- E. 54 mL

71. What pricing policy is used by the management of a pharmacy, if during the price formation for pharmaceutical products the main focus is the prices offered by the nearest pharmacies, rather than pharmacy's own expenses or demand for the products?

- A. Competition-based pricing
- B. Tender pricing
- C. Cost-based pricing
- D. Breakeven pricing
- E. Demand-based pricing

72. 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. Linear
- C. Line and staff
- D. Divisional
- E. Matrix

73. 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. Product-based marketing
- B. Regional marketing
- C. Functional marketing
- D. Segment marketing
- E. Combined marketing (matrix model)

74. 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. Semantic barriers
- B. Nonverbal barriers
- C. Poor feedback
- D. Lack of understanding of the information's importance
- E. Psychological distance

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

- A. Insufficient amount of lubricants
- B. Insufficient amount of adhesives
- C. Insufficient amount of leaveners
- D. Insufficient amount of diluents
- E. Insufficient amount of dyes

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

- A. Acetylphthalylcellulose
- B. Diethylaminomethylcellulose
- C. Benzylaminocellulose
- D. Paraaminobenzoate of sugars
- E. Sodium carboxymethyl cellulose

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

- A. Xeroform (bismuth tribromphenolate and bismuth oxide complex)
- B. Glucose
- C. Ascorbic acid
- D. Zinc oxide
- E. Magnesium oxide

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

- A. Basic bismuth nitrate
- B. Sulfur
- C. Camphor
- D. Streptocide (Sulfanilamide)
- E. Ethazole

79. Oblong tablets are called:

- A. Caplets
- B. Capsules
- C. Dragee
- D. Pellets
- E. Forte tablets

80. What is the purpose of *injectabletae* tablets?

- A. Obtaining injectable solutions
- B. Obtaining solutions for various pharmaceutical purposes
- C. Sublingual use
- D. Implantation
- E. Oral use

81. What substances are used as leaveners in «effervescent» tablets?

- A. Mixtures of sodium bicarbonate with tartaric or citric acid
- B. Agar agar, alginic acid
- C. Aerosil (fumed silica), polysorbate 80
- D. Starch, alginic acid
- E. Sodium bicarbonate, agar agar

82. How should the rectal ointments be applied?

- A. Apply to the affected area of the anus
- B. Apply to the skin
- C. Apply to the conjunctival mucosa
- D. Apply to the nasal mucosa
- E. Applied to the external genitalia

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

- A. Reach the systemic circulation and enhance the effect of drugs
- B. Absorbed by the outer layers of the skin
- C. Protect the skin from microbial infection
- D. Protect the skin from external factors
- E. Prevent drying and contamination of the epidermis

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

- A. During eating
- B. 1 hour before a meal
- C. 1 hour after a meal
- D. 2 hours before a meal
- E. Regardless of food intake

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

- A. Protamine sulfate
- B. Unithiol (Dimercaptopropansulfonate sodium)
- C. Naloxone
- D. Thiosulfate
- E. Methionine

86. 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. Tolerance
- B. Withdrawal syndrome
- C. Reye syndrome
- D. Idiosyncrasy
- E. Anaphylactic reaction

87. 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 β_2 -adrenomimetic. What medicine was prescribed by the doctor in this case?

- A. Salbutamol
- B. Fluticasone
- C. Ipratropium bromide
- D. Tiotropium bromide
- E. Budesonide

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

- A. Leaveners
- B. Thickeners
- C. Solvents
- D. Film formers
- E. Antifriction materials

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

- A. Reduced effectiveness of iron preparations
- B. Increased effectiveness of antacids
- C. Increased risk of hepatotoxicity
- D. Decreased blood pressure
- E. Increased blood pressure

90. Which reagent is used to determine the presence of bromide ions in the filtrate in the presence of $CHCl_3$ after mineralization of bromocamphor with zinc dust?

- A. Chloramine
- B. Chloromethane
- C. Chloral hydrate
- D. Sodium chloride
- E. Acetyl chloride

91. A patient diagnosed with acute rhinitis was using xylometazoline drops. After 7

days of treatment, the patient notes that the effect of the medicine decreased and was not restored after an increase in the dosage. What medical term characterizes a sudden decrease in the sensitivity to a medicine?

- A. Tachyphylaxis
- B. Synergism
- C. Antagonism
- D. Tolerance
- E. Withdrawal syndrome

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

- A. Simethicone
- B. Platyphyllin
- C. Almagel (Algedrate + magnesium hydroxide)
- D. Papaverine
- E. Drotaverine

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

- A. Gastrointestinal bleeding
- B. Salivation
- C. Pneumonia
- D. Myocarditis
- E. Pyelonephritis

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

- A. Omeprazole
- B. Prednisolone
- C. Spironolactone
- D. Ceftriaxone
- E. Metamizole sodium

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

- A. Diversification
- B. Modernization
- C. Stability
- D. Survival
- E. —

96. What preparation has an antacid effect?

- A. Aluminum phosphate
- B. Pirenzepine
- C. Omeprazole
- D. Famotidine
- E. Ranitidine

97. What preparation has an antiemetic effect?

- A. Metoclopramide
- B. Sodium bicarbonate
- C. Aluminum phosphate
- D. Loperamide
- E. Clarithromycin

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

- A. Lactulose
- B. *Ononis* herbal medicine
- C. Bisacodyl
- D. Senadexine (sennosides A and B)
- E. Macrogol

99. 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. Sales promotion
- B. Public relations
- C. Lobbying
- D. Personal selling
- E. Advertising

100. 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. Merchandising
- B. Public relations
- C. Lobbying
- D. Personal sale
- E. Advertising

101. 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. Remarketing
- B. Synchromarketing
- C. Countermarketing
- D. Conversion marketing
- E. —

102. 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. Manufacturing activity
- C. Commercial activity
- D. Financial activity
- E. —

103. 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. Demographic approach
- B. Geographical approach
- C. Psychographic approach
- D. Behavioral approach
- E. —

104. Silibor and carsil, preparations of *Silybum marianum*, are used as hepatoprotectors. From what herbal raw material are these medicines obtained?

- A. *Silybum* seeds
- B. *Silybum* roots
- C. *Silybum* grass
- D. *Silybum* leaves
- E. *Silybum* flowers

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

- A. Conversion marketing
- B. Demarketing
- C. Incentive marketing
- D. Synchromarketing
- E. Remarketing

106. 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. Inventory
- B. Cash flow register
- C. Register of requisitions
- D. Commodity report
- E. Accounts ledger

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

- A. Sodium thiopental
- B. Suprastin (Chloropyramine)
- C. Midecamycin
- D. Metoprolol
- E. Anaesthesin (Benzocaine)

108. A herbal raw material is being analyzed. The leaves are round-cordate, with serrated leaf margin; the leaf margin serration is fine, sparse, and irregular. The upper part of the leaf is bare, while below it is covered in a white down. The petioles

are thin, with grooved upper part, often downy as well. The leaf blade is usually 8–15 cm long, the petiole is approximately 5 cm long. The color of the leaves on their upper side is green, while below they are whitish-gray. No odor. The taste is slightly bitter and feels slimy. Identify this medicinal herbal raw material:

- A. *Folia Farfarae*
- B. *Folia Uvae-ursi*
- C. *Folia Urticae*
- D. *Folia Menthae*
- E. *Folia Eucalypti*

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

- A. Caffeine
- B. Codeine
- C. Morphine
- D. Papaverine
- E. Atropine

110. 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. Papaverine hydrochloride
- C. Pilocarpine hydrochloride
- D. Clonidine hydrochloride
- E. Morphine hydrochloride

111. What reagent is used to identify sodium sulfate?

- A. Barium chloride
- B. Silver nitrate
- C. Calcium chloride
- D. Cobalt chloride
- E. Iron(III) chloride

112. 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. Tropane derivatives
- B. Purine derivatives
- C. Quinuclidine derivatives
- D. Isoquinoline derivatives
- E. Indole derivatives

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

- A. Aceclidine
- B. Bendazol
- C. Nicotinic acid
- D. Metronidazole
- E. Nitroxoline

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

- A. Epinephrine tartrate
- B. Phenazepam
- C. Sulfanilamide
- D. Papaverine hydrochloride
- E. Promedol (Trimeperidine)

115. For rapid analysis of a dosage form with procaine hydrochloride, an analytical chemist performed necessary chemical reactions. What reaction is a variation of Schiff base formation?

- A. Lignin test
- B. Azo dye formation
- C. Iodoform test
- D. «Silver mirror» reaction
- E. Hydroxamic reaction

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

- A. Potassium chromate
- B. Starch
- C. Methylene blue
- D. Tropeolin 00
- E. Bromophenol blue

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

- A. Phenolic hydroxyl
- B. Ester group
- C. Primary aromatic amino group
- D. Carboxyl group
- E. Aliphatic amino group

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

- A. Piracetam
- B. Bendazol
- C. Furosemide
- D. Tolbutamide
- E. Phencarol (Quifenadine)

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

- A. Metamizole sodium
- B. Bendazol
- C. Metronidazole
- D. Thiamazole
- E. Piracetam

120. 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 back to the manufacturing factory
- D. Withdraw the medicines and send them to the quality assurance department of the manufacturing company
- E. Withdraw the medicines and send them for disposal

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

- A. 126 days
- B. 70 days
- C. 100 days
- D. 50 days
- E. 115 days

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

- A. Accompanying statement
- B. Cash deposit slip
- C. Payment order
- D. Cashier's check
- E. Cash book

123. 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. Nimesulide
- C. Diclofenac sodium
- D. Acetylsalicylic acid
- E. Indomethacin

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

- A. Chlorine
- B. Nitrogen
- C. Hydrogen
- D. Oxygen
- E. Fluoride

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

- A. Polyvinylpyrrolidone
- B. Thiopental sodium
- C. Piracetam
- D. Midantan (Amantadine)
- E. Menthol

126. 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. Horizontal job rotation
- D. Recruiting
- E. —

127. A medical facility located in Kyiv buys its diagnostic tools from a domestic manufacturer. What level of distribution channel is it?

- A. Zero-level channel
- B. Three-level channel
- C. Two-level channel
- D. One-level channel
- E. Four-level channel

128. Pharmaceutical corporations pay great attention to the formation of a certain set of values, traditions, and behavioral norms for all their employees. What is formed as a result of this type of corporate organizational work?

- A. Organization culture
- B. Organization profitability
- C. Product diversification
- D. Business expansion
- E. Staff leasing

129. 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

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

- A. Bismuth subcitrate
- B. Amoxicillin
- C. Metronidazole
- D. Omeprazole
- E. Tetracycline

131. 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. Tetracyclines
- C. Oxyquinolines
- D. Nitrofurans
- E. Aminoglycosides

132. 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. One month after the current one
- C. Two months after the current one
- D. Five years after the current one
- E. Return the prescription to the pharmacy visitor

133. 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. Free of charge
- B. With 50% discount
- C. At full cost
- D. With 30% discount
- E. With 70% discount

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

- A. F-3 form
- B. F-1 form
- C. 2 copies of F-1 form
- D. 2 copies of F-3 form
- E. F-1 and F-3 forms

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

- A. 5 years
- B. 3 years
- C. 2 years after the current one
- D. 7 years after the current one
- E. 1 year after the current one

136. During drug identification, a sample of the substance was moistened with concentrated sulfuric acid and the bottom

of the test tube was carefully heated. A white plaque appeared that coated the test tube walls from the inside. What substance can be detected using this reaction?

- A. Sodium benzoate
- B. Theophylline monohydrate
- C. Morphine hydrochloride
- D. Benzocaine
- E. Nitrofurural (Nitrofurazone)

137. To identify acetylsalicylic acid, the substance is subjected to alkaline hydrolysis. After acidification of the reaction mixture, acetic acid is formed, which can be detected using the reaction with ethanol in the presence of concentrated sulfuric acid. What reaction product causes the characteristic odor in this case?

- A. Ethyl acetate
- B. Benzaldehyde
- C. Pyridine
- D. Ammonia
- E. Sulfur dioxide

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

- A. Compounding and retail pharmacies
- B. State, community-owned, and private pharmacies
- C. Self-financing pharmacies and pharmacies financed from the state budget
- D. Pharmacies with centralized and decentralized accounting
- E. Retail and hospital pharmacies

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

- A. Prescription medicines
- B. Over-the-counter medicines
- C. Disinfectants
- D. Dietary supplements
- E. Cosmetics

140. Information on the pharmacy's actual stock of narcotic drugs, psychotropic substances, and precursors must be checked against the balance records made in the relevant logbook. How often must it be done?

- A. Monthly
- B. Quarterly
- C. Daily
- D. Annually
- E. —

141. 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. Receipt of the funds for salary payment
- D. Return of unused accountable funds
- E. Coverage of the shortages revealed during the stock-taking

142. 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. Fiscal cash receipt for the goods/services
- B. Transactions ledger
- C. Accompanying statement to the bag with cash
- D. Request for a cash transfer
- E. Cash book

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

- A. Bromatometry
- B. Alkalimetry
- C. Acidimetry in a non-aqueous medium
- D. Nitritometry after alkaline hydrolysis
- E. Photocolorimetry

144. What medicinal substance in the process of its interaction with a solution of silver nitrate forms a white precipitate that quickly turns yellow and then black?

- A. Sodium thiosulfate
- B. Hydrogen peroxide
- C. Sodium bromide
- D. Sodium chloride
- E. Sodium iodide

145. A pharmaceutical company constantly introduces new forms of medicines in response to market needs. It is characteristic of the following direction of product policy in the company's marketing:

- A. Product modification
- B. Reduction
- C. Diversification
- D. Modernization
- E. Differentiation

146. Compulsory personal income taxes (PIT) are deducted from the salaries of pharmacy employees. Specify the personal income tax rate:

- A. 18%
- B. 15%
- C. 20%
- D. 0%
- E. 5%

147. Microcapsules are obtained in the process of applying a shell of metallic silver, zinc, etc. to the solid particles of the encapsulated substance. Name this method:

- A. Galvanization
- B. Dragee making
- C. Core suspension
- D. Coacervation
- E. Polymerization

148. Ginseng root preparations have tonic and adaptogenic properties, improve mental and physical performance. What herbal preparation can be used as a substitute for ginseng tincture?

- A. *Araliae mandshuricae radices*
- B. *Calami radices*
- C. *Tormentillae radices*
- D. *Taraxaci radices*
- E. *Glycyrrhizae radices*

149. What five-membered heterocycle is the basis of the structural formula of anti-protozoal and antibacterial drug metronidazole?

- A. Imidazole
- B. Pyrazole
- C. Furan
- D. Pyrrole
- E. Thiazole

150. 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. $FeCl_3$
- B. NH_3
- C. $AgNO_3$
- D. $K_3[Fe(CN)_6]$
- E. Concentrated HNO_3